Meyer ELECTRO-LIFT

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V-68 power unit service manual

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Meyer

FOREWARD

This Service Manual includes complete information for servicing the following Electro Lift® Units:

V-68 E-Z Mount Plus

IMPORTANT: Maintenance and repairs must be performed with the moldboard on the ground.

The information is grouped according to the type of work being performed, such as diagnosis and testing, disassembly and reassembly. Special tools and specifications are also included in this manual.

All information, illustrations and product descriptions contained in this manual are correct at publication time. We do, however, reserve the right to make changes at any time without prior notice.

MEYER PRODUCTS INC.

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Meyer Products Inc. reserves the right, under its continuing product improvement program, to change construction or design details, specifications and prices without notice or without incurring any obligation.

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GENERAL INFORMATION

Model Identification
The V-68 unit is an electrically powered hydraulic mechanism specifically designed for use with the Meyer E-Z Mount Plus Super-V Snow Plow system.

Model Identification and Serial Number Location
Inclusion of the model number and serial number is extremely important when writing up warranty claim forms and product report forms for proper evaluation and follow up.

The basic model number is located on the name plate (plastic cover). The serial number is located on the name plate decal underneath the plastic cover.

MAINTENANCE
The following maintenance information is intended as a basic guide for providing the V-68 unit with the proper service and care. Sustained heavy duty operation or operating under adverse conditions may necessitate more frequent servicing.

General Maintenance

Cleanliness
The greatest enemy to any hydraulic system is dirt or contamination. Therefore, cleanliness must be stressed at the time of installation, servicing and repairing.

Vehicle Electrical System

Maximum performance and efficiency of the Electro Lift® unit requires that the vehicle's electrical system be properly maintained and consist of:

Battery ---------- 70 Amp. Hr. Minimum or 550 Cold Cranking Amps.
Alternator ------ 60 Amp. Minimum

Check Regularly

1. Battery Terminals - Must be clean and free of corrosion.
2. Electrical Connections - Must be free of corrosion and tight.
3. Battery - Must be in first-class condition.
4. Alternator (or Generator) and Regulator - Must be functioning to specifications.
5. Hydraulic Fluid Reservoir Level - A significant drop in hydraulic fluid level indicates a leak which must be located and corrected. Insufficient hydraulic fluid may result in severe damage.

POST-SEASON MAINTENANCE

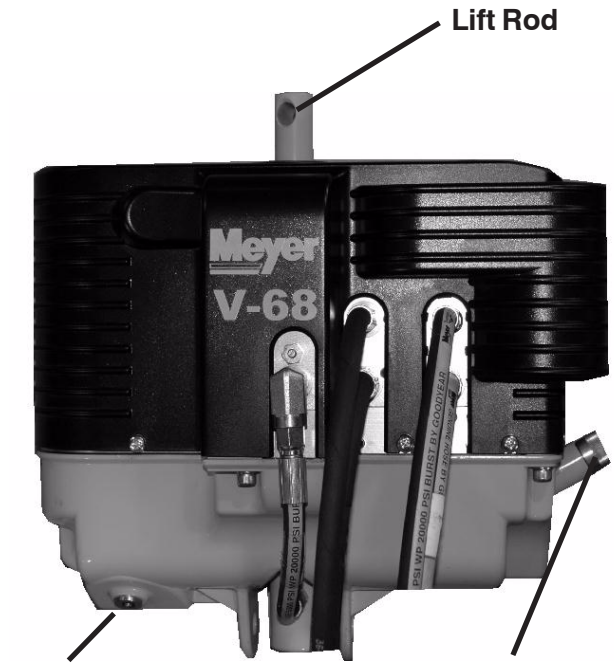
Meyer Hydraulic Fluid M-1.

Meyer Hydraulic Fluid M-1 is a specially formulated mineral oil which maintains an almost constant viscosity from normal to sub-zero temperatures. Because it remains free flowing at extremely low temperatures, the performance and efficiency are not affected.

Meyer Hydraulic Fluid M-1 also contains an additive which neutralizes moisture accumulating in the fluid due to condensation. It is effective for a maximum of one year's use.

Meyer Products Inc. will not be liable for damages resulting from the use of inferior or other fluids or oils.

FIGURE 0-1 V-68



M-2 Flush Fluid

M-1 Hydraulic Fluid

Replacement of Hydraulic Fluid

After a season's use, completely drain the hydraulic fluid (including hydraulic fluid in hoses and cylinders). Drain fluid through filler hole shown in Figure 0-1 or drain hole in base by completely retracting lift rod and unbolting unit to pour fluid out or using a suction pump. Disconnect the fittings at the Angling cylinders and completely retract the cylinder rods and purge cylinders and hoses of all hydraulic fluid. Flush the complete system including unit, hoses and angling rams with the M-2 Flushing Fluid, or a non wax (Napthenic) cleaner. If kerosene (Parrafinic) is used to flush the system, the system must be flushed again to remove any kerosene with M-2 Flushing Fluid, or a (Napthenic) based cleaner that is wax free .

Refill V-68 unit with M-1 Fluid by fully retracting lift rod (Ram) and filling reservoir to just below the filler neck. Fill and bleed hoses and Power Angling cylinders by loosening hydraulic fittings at cylinders until they leak. Power angle wings repeatedly from one side to the other until fluid flows steadily from the leaking fittings while maintaining a constant check on the reservoir fluid level.

Raise and lower the plow several times and with lift rod fully retracted, give a final check to the fluid level and replace filler plug. Proper fluid level is achieved when the plow can be fully raised and both plow wings are extended into the Scoop position.

Protection Against Rust and Corrosion

When the V-68 unit is not used for extended periods, protect the chromed lift rod (Ram) by fully extending it and coating it with chassis lubricant. Full extension of the lift rod (Ram) fills the cylinder with hydraulic fluid. Also put the plow wings in the retracted position so the Angle cylinders do not expose the chrome rod.

SECTION 1 - GENERAL DESCRIPTION AND THEORY OF OPERATION

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GENERAL DESCRIPTION

V-68 unit is an electrically powered and electrically controlled hydraulic mechanism specifically designed for use with Meyer Super-V Snow Plows. The V-68 raises and lowers the plow with an integral 8" stroke hydraulic cylinder.

In addition to raising and lowering the plow hydraulically, the V-68 angles the plow wings hydraulically, left and right, via remote double acting hydraulic cylinders.

The Electro Lift® unit consists of a specially designed high torque 12-volt DC motor which is directly coupled to a gear-type hydraulic pump. The pump obtains its supply of hydraulic fluid from an integral reservoir which totally surrounds the integral hydraulic cylinder which raises and lowers the plow.

The V-68 includes an integral valve body which contains six electrically controlled solenoid valve cartridges. Solenoid valve cartridge “S1”, “S2”, “S3”, “S5”, “S6” and “S7”.

Additional components which control and supply electrical current to the V-68 unit is an operator controlled Touchpad, a solenoid switch to supply high amperage current to the unit’s motor (motor solenoid)

THEORY OF OPERATION

FUNCTIONS

The V-68’s six basic functions performed are:

- Raise snow plow
- Lower snow plow
- Extend Left Wing
- Retract Left Wing
- Extend Right Wing
- Retract Right Wing

Refer to Figures 1-1 through 1-10 (pages 6 thru 15) for electrical and hydraulic flow chart for each function. Each figure explains which component is actuated and related in each function.

V-68 Raise: Motor, "S1" and "S2"

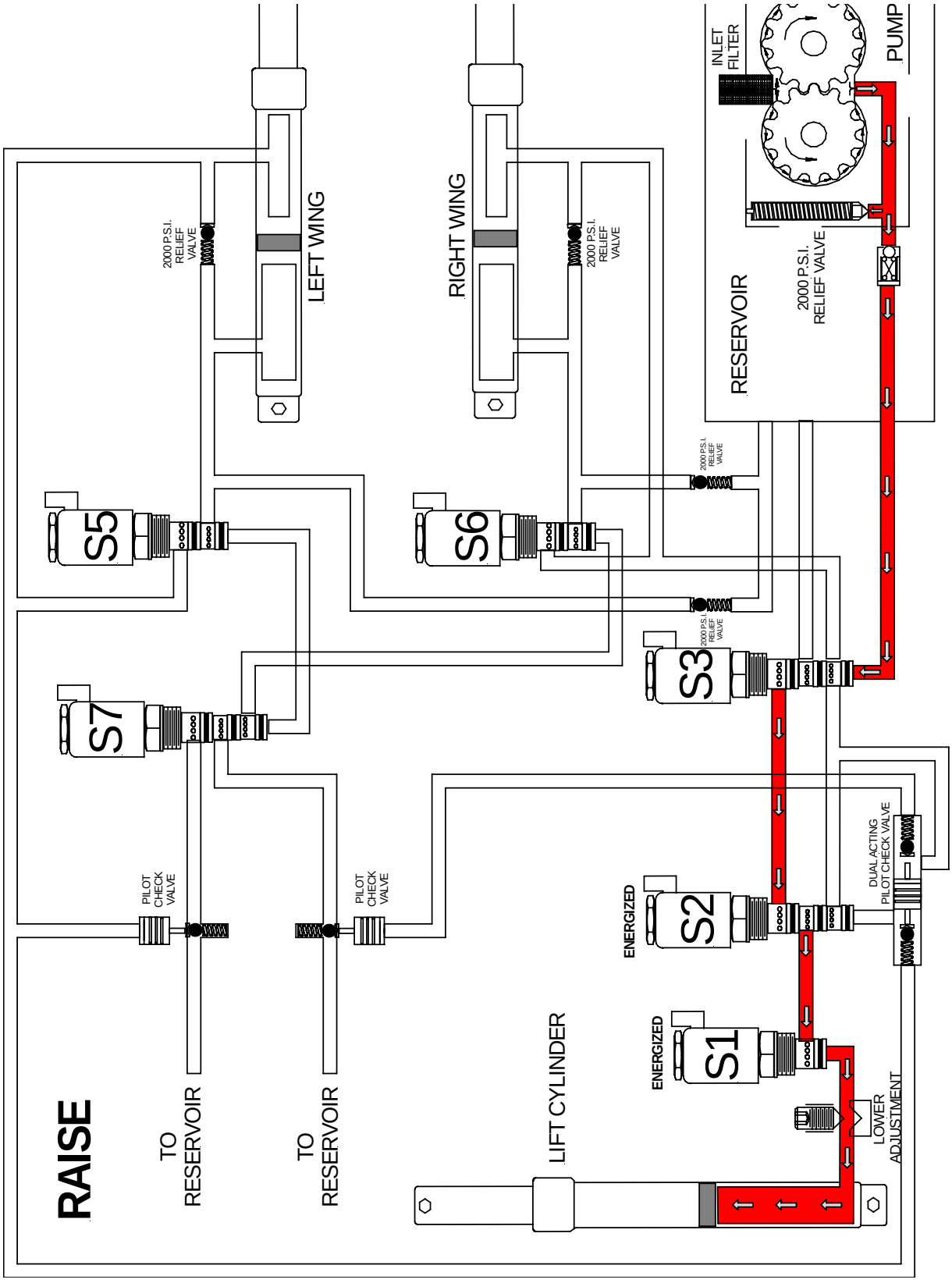

FIGURE 1-1

V-68 Lower: “S1”, “S2” and “S3”

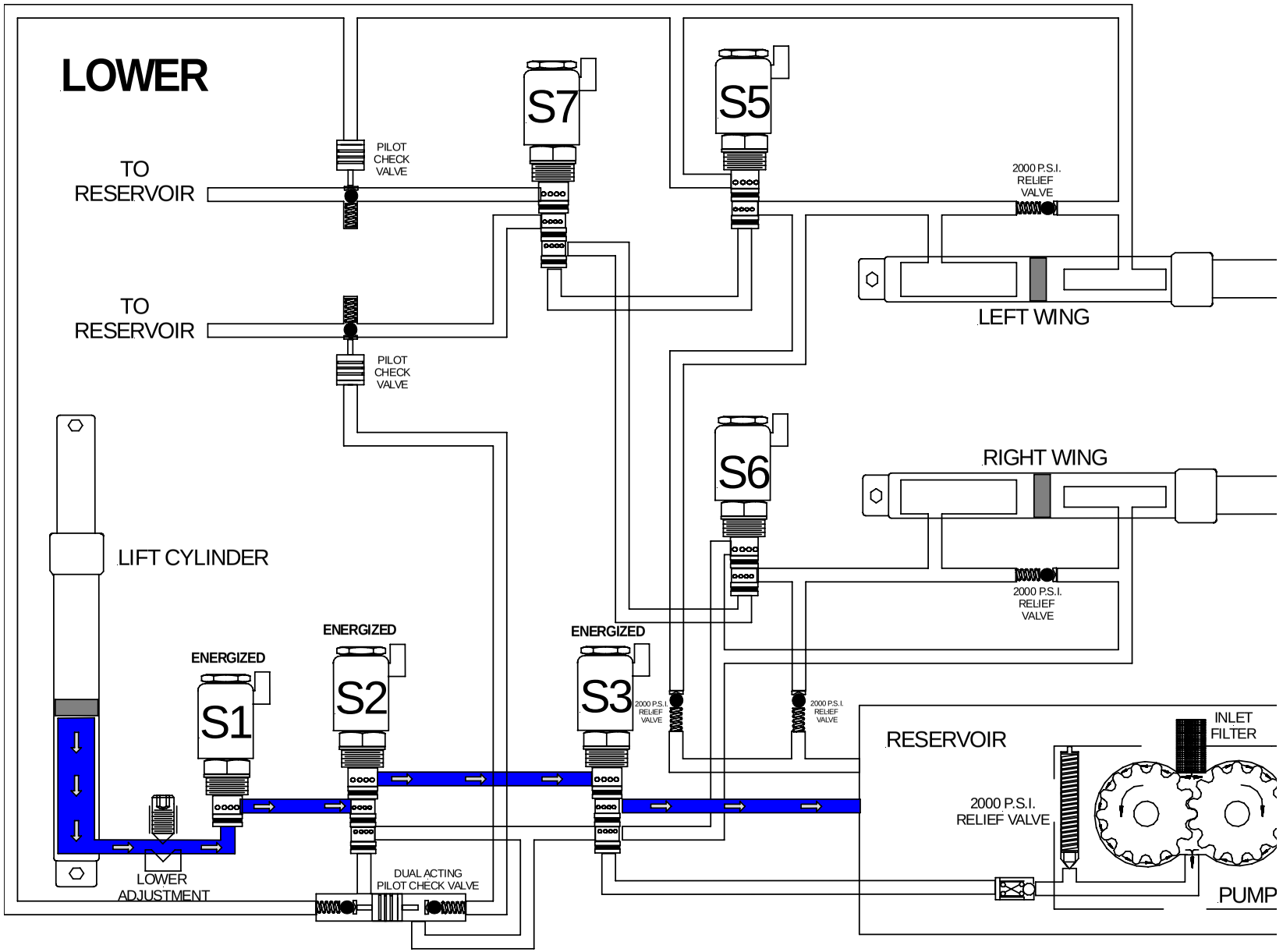

FIGURE 1-2

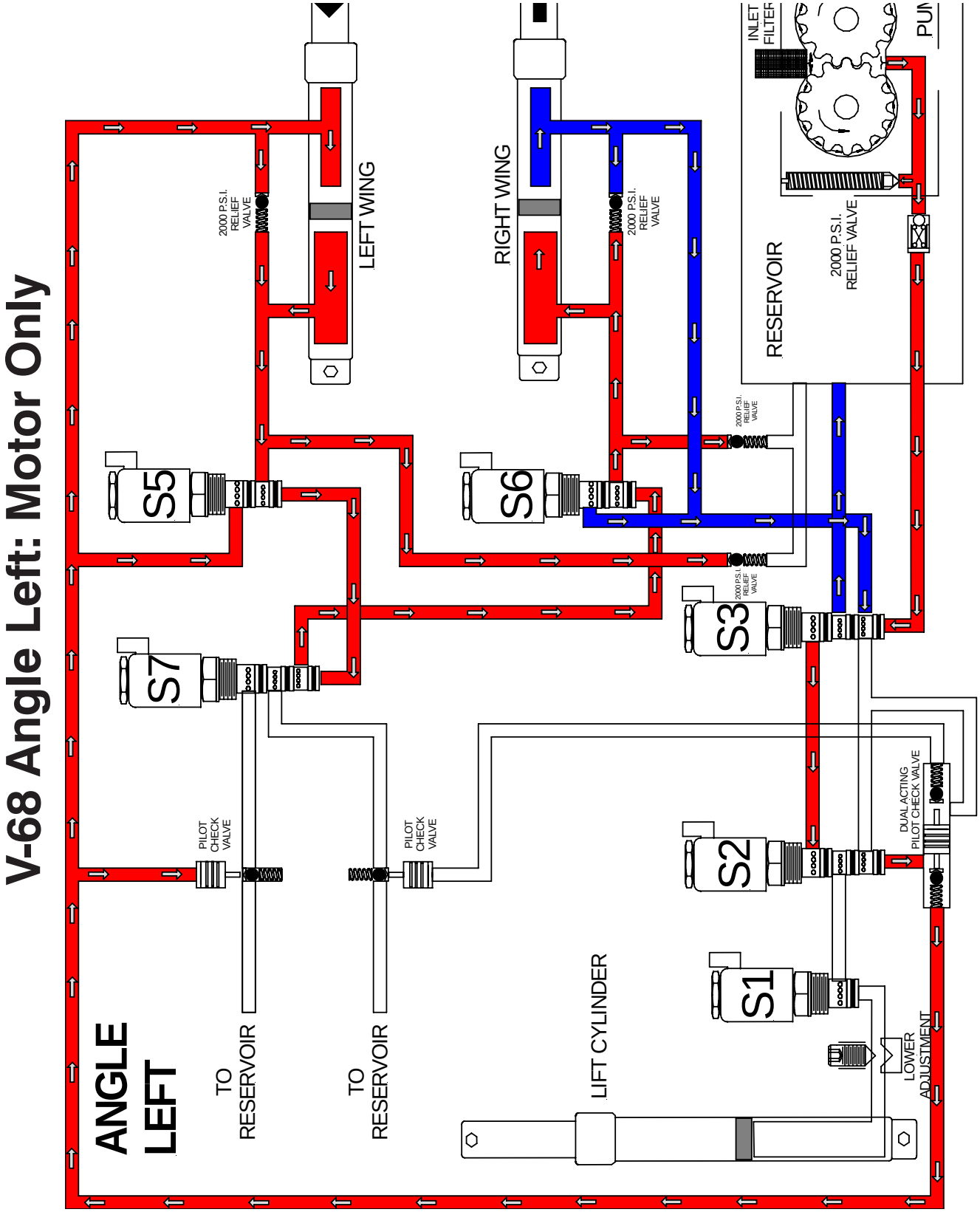
V-68 Angle Left: Motor Only
ANGLE
LEFT
TO
RESERVOIR
TO
RESERVOIR
PILOT
CHECK
VALVE
PILOT
CHECK
VALVE
LIFT CYLINDER
LOWER
ADJUSTMENT
DUAL ACTING
PILOT CHECK VALVE
S1
S2
S3
S5
S6
S7
2000 P.S.I.
RELIEF
VALVE
LEFT WING
RIGHT WING
RESERVOIR
2000 P.S.I.
RELIEF VALVE
INLET
FILTER

FIGURE 1-3

V-68 Angle Right: Motor and “S3”

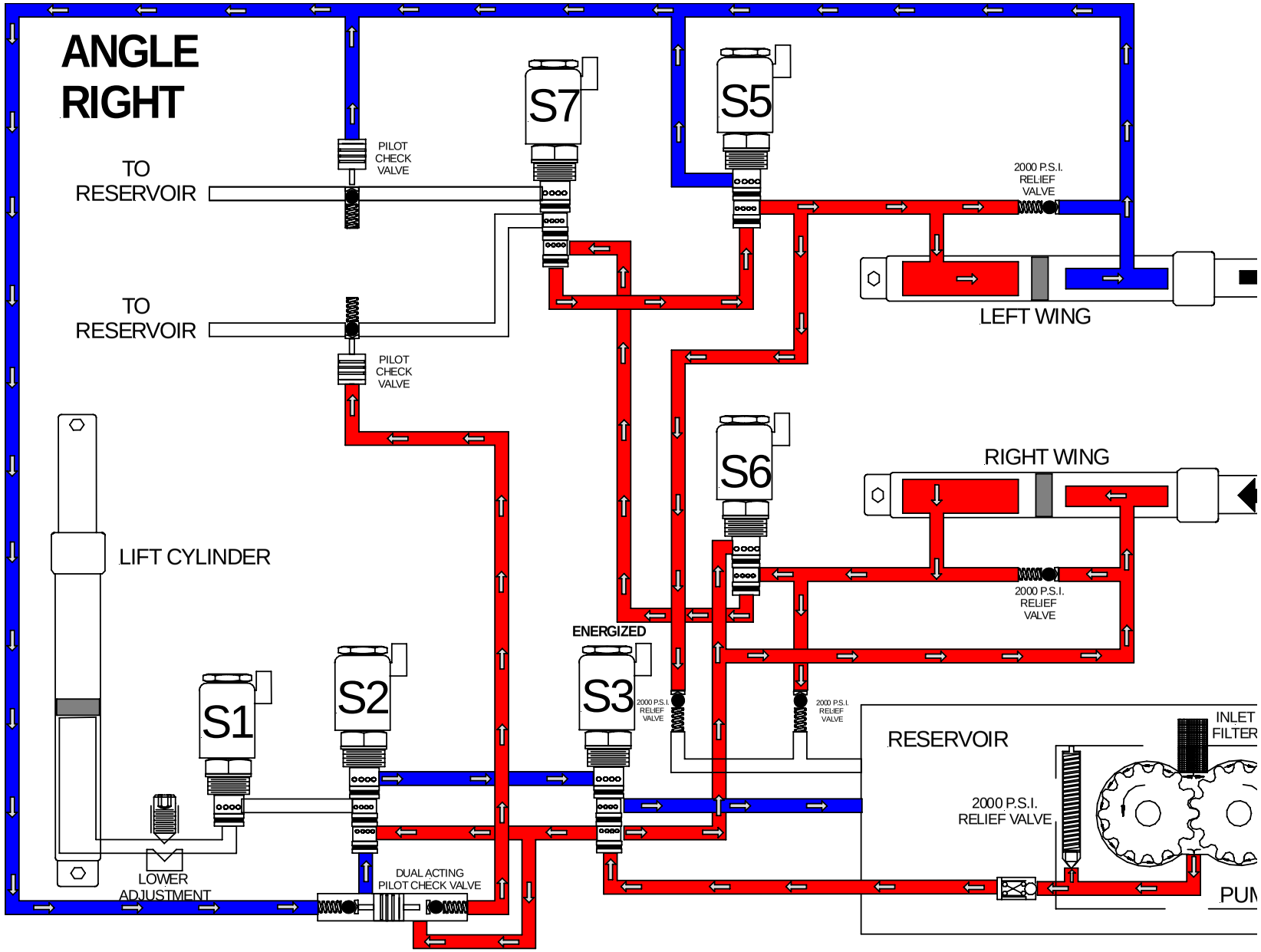

FIGURE 1-4

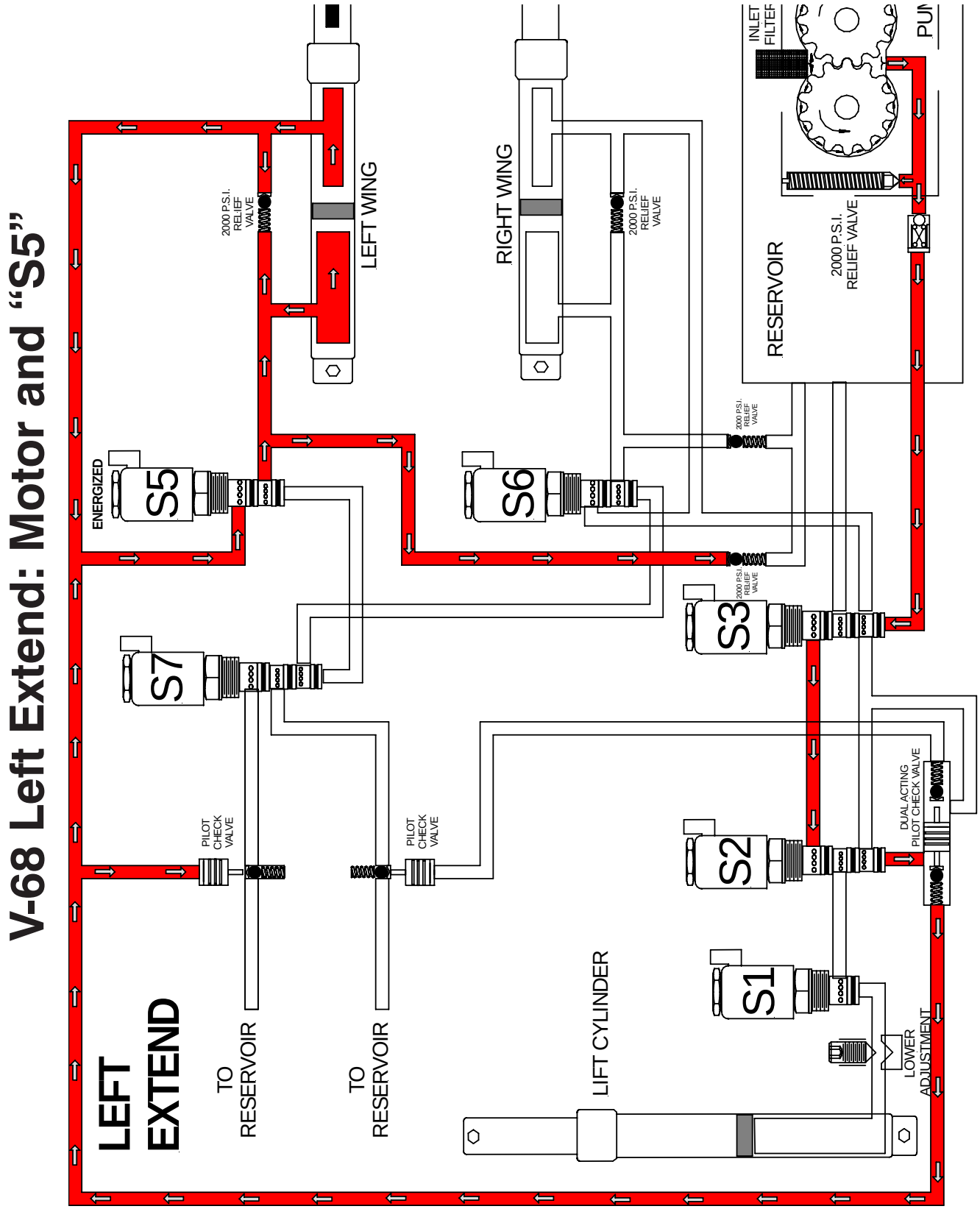
V-68 Left Extend: Motor and "S5"
LEFT EXTEND
ENERGIZED
S5
S6
S7
S3
S2
S1
LEFT WING
RIGHT WING
RESERVOIR
2000 P.S.I. RELIEF VALVE
PILOT CHECK VALVE
TO RESERVOIR
LIFT CYLINDER
DUAL ACTING PILOT CHECK VALVE
LOWER ADJUSTMENT
INLET FILTER

FIGURE 1-5

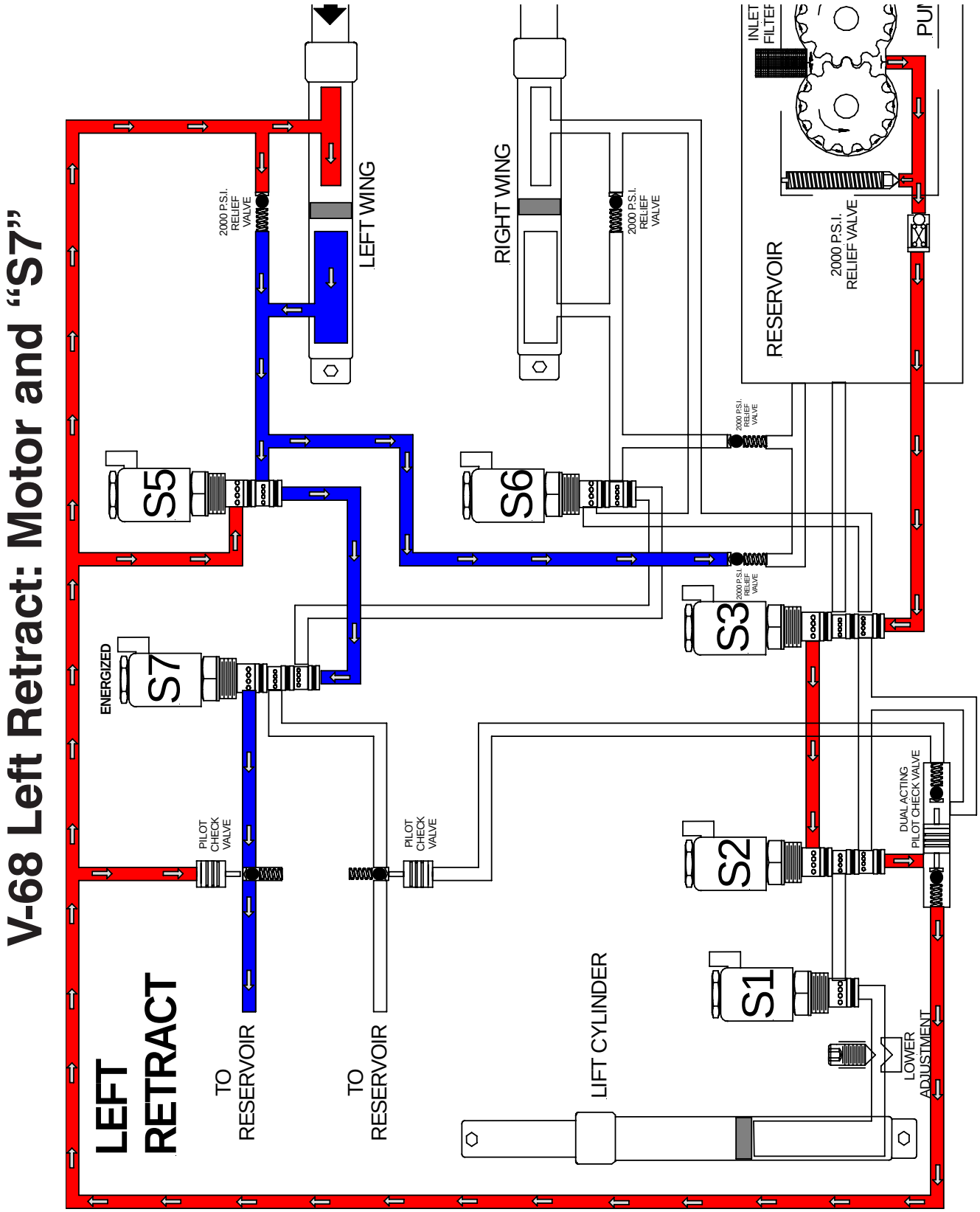
V-68 Left Retract: Motor and "S7"
LEFT
RETRACT
ENERGIZED
S7
S5
S6
S3
S2
S1
LEFT WING
RIGHT WING
RESERVOIR
2000 P.S.I.
RELIEF
VALVE
PILOT
CHECK
VALVE
TO
RESERVOIR
LIFT CYLINDER
DUAL ACTING
PILOT CHECK VALVE
LOWER
ADJUSTMENT
INLET
FILTER

FIGURE 1-6

V-68 Right Extend: Motor, “S3” and “S6”

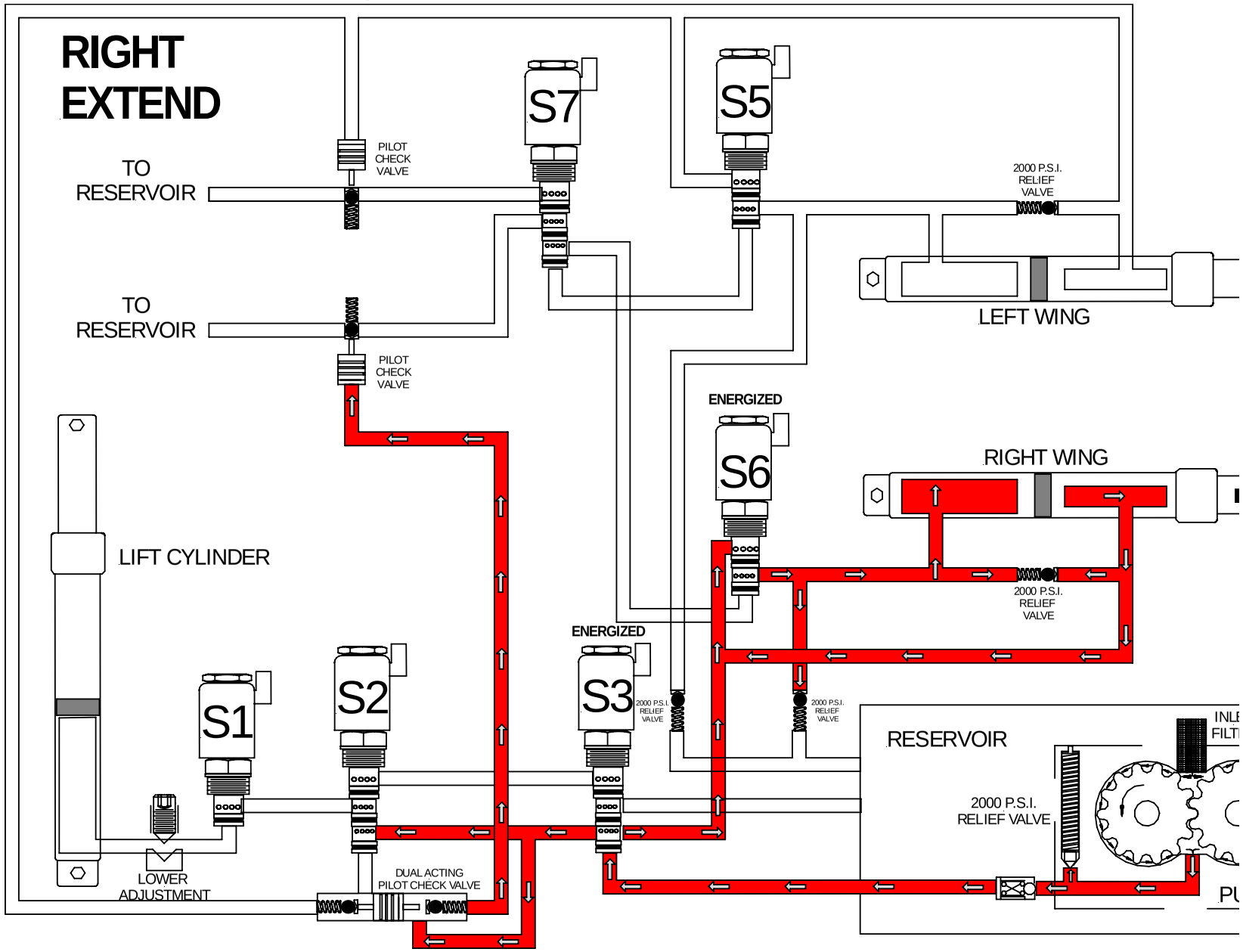

FIGURE 1-7

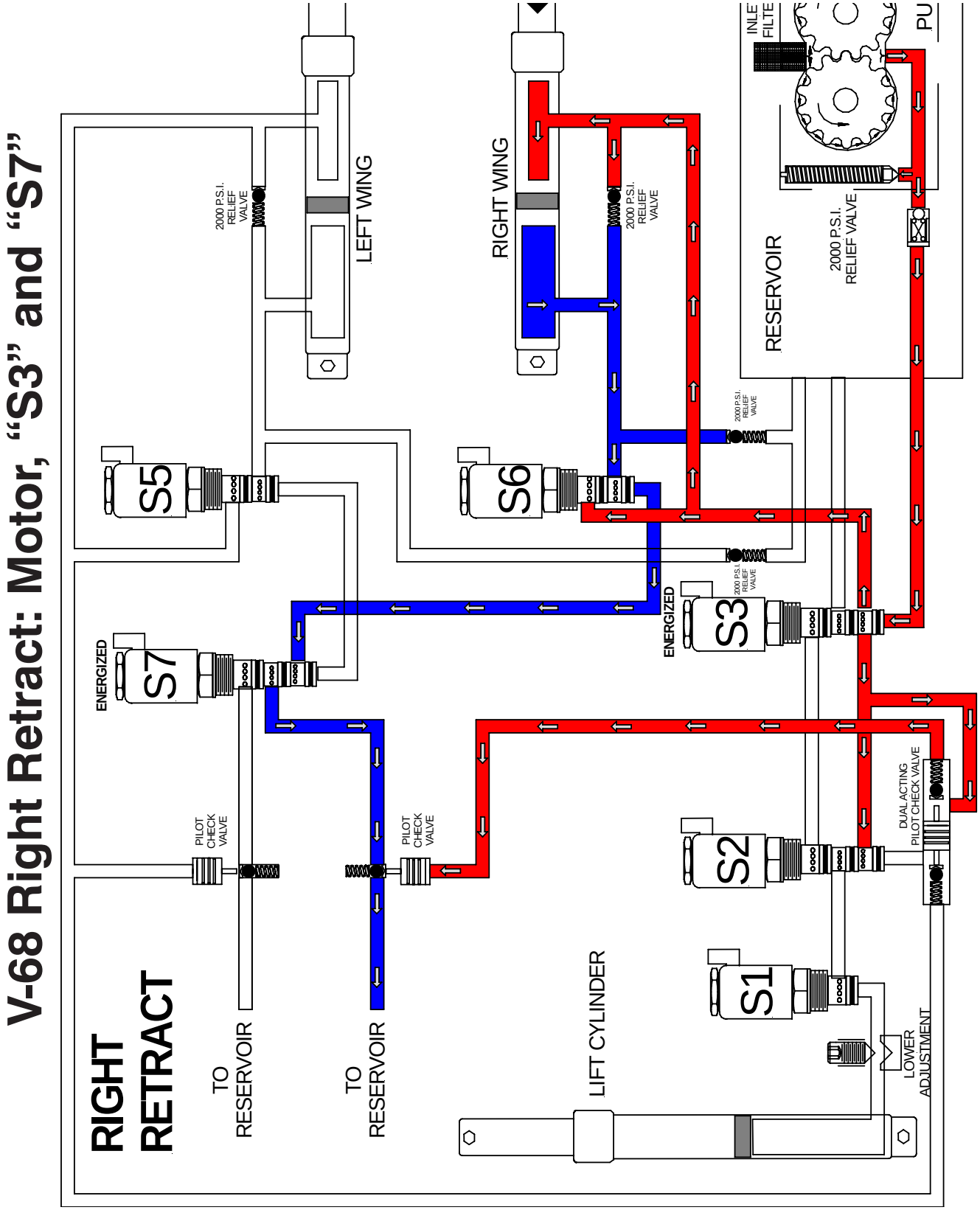
V-68 Right Retract: Motor, "S3" and "S7"
RIGHT RETRACT
TO RESERVOIR
TO RESERVOIR
PILOT CHECK VALVE
PILOT CHECK VALVE
ENERGIZED
S7
S5
2000 P.S.I. RELIEF VALVE
LEFT WING
RIGHT WING
S6
2000 P.S.I. RELIEF VALVE
ENERGIZED
S3
2000 P.S.I. RELIEF VALVE
2000 P.S.I. RELIEF VALVE
RESERVOIR
INLE FILTE
PU
S2
DUAL ACTING PILOT CHECK VALVE
S1
LIFT CYLINDER
LOWER ADJUSTMENT

FIGURE 1-8

V-68 Scoop: Motor, “S2”, “S3”, “S5”, “S6” and “S7”

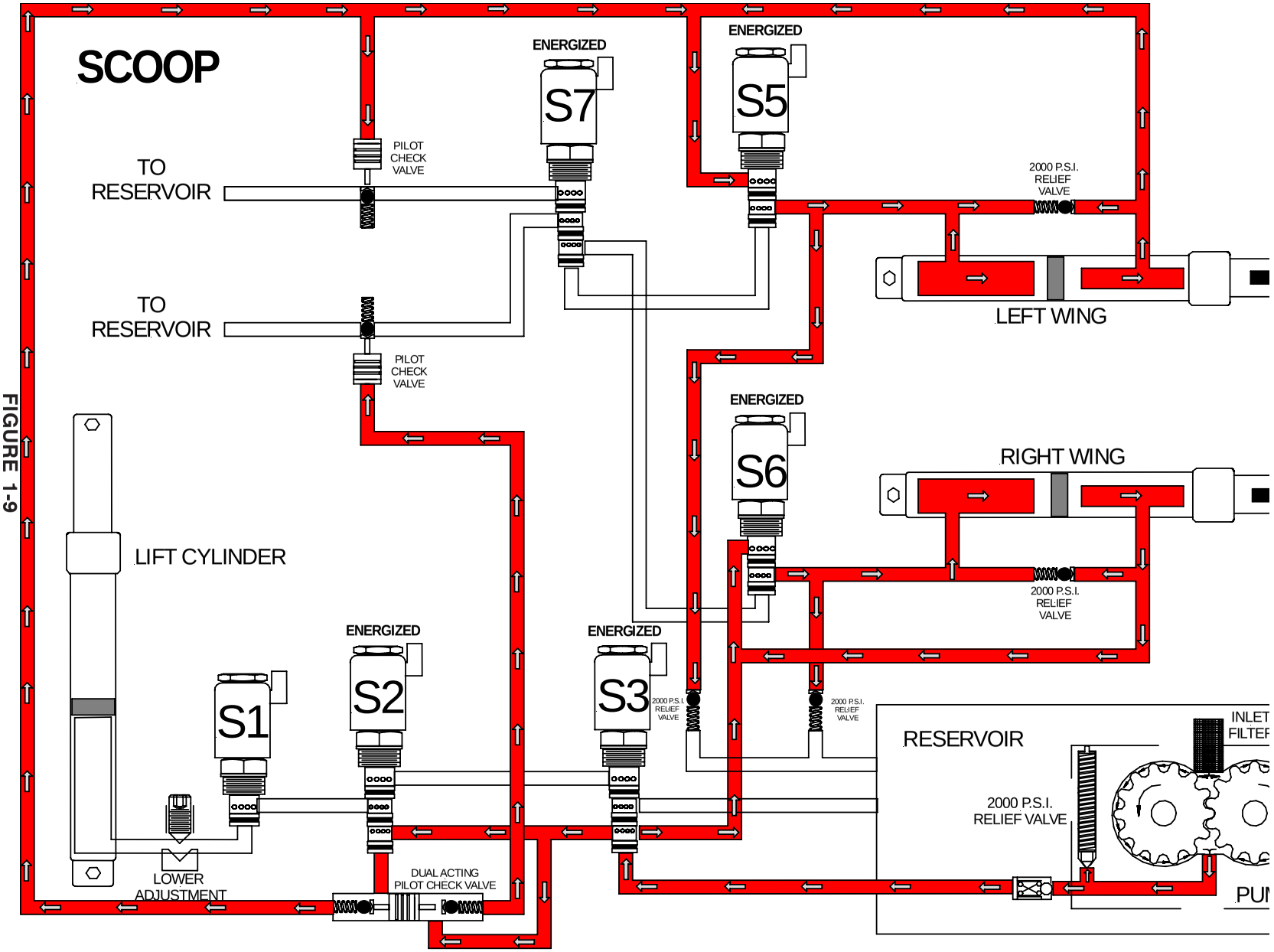

FIGURE 1-9

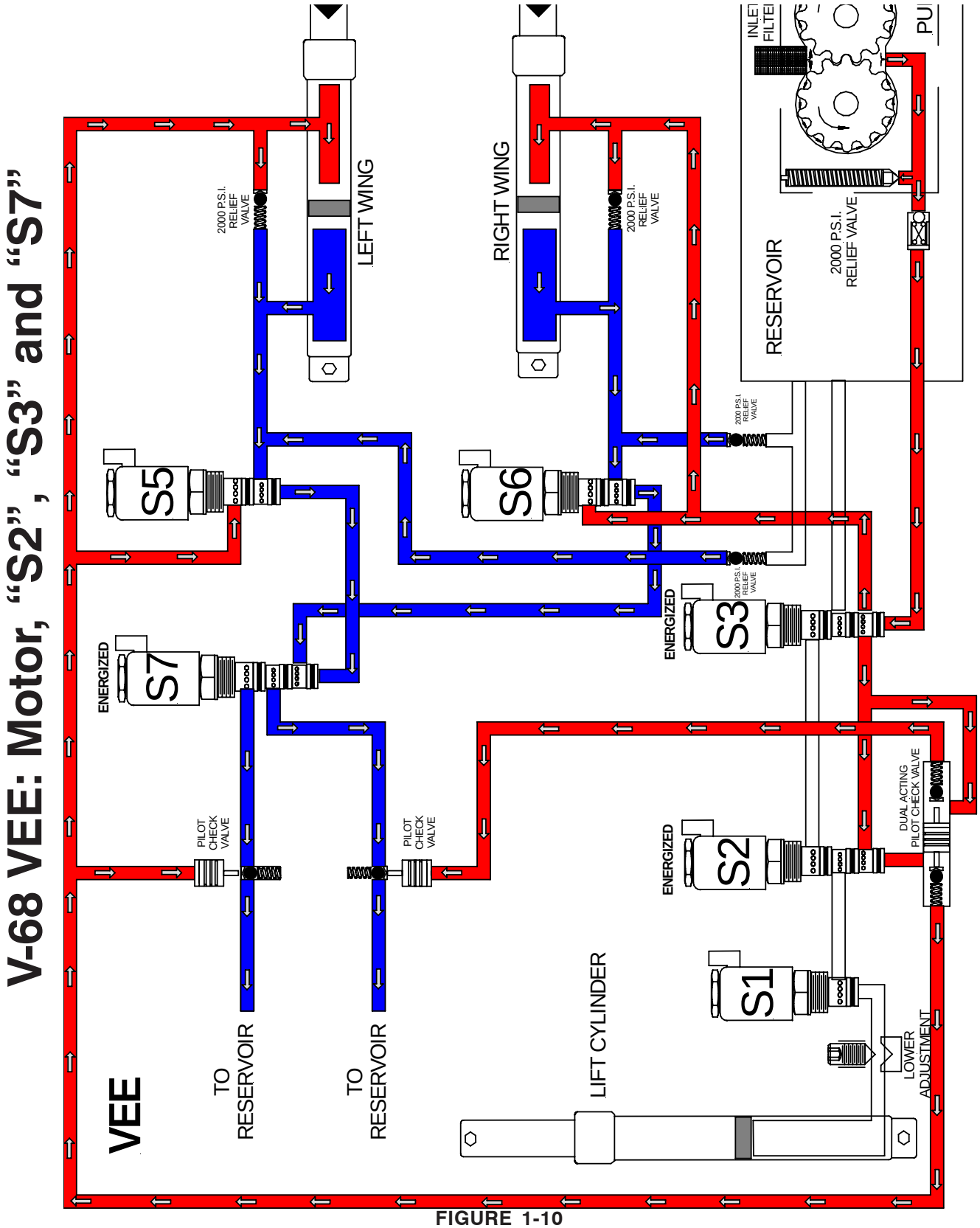
V-68 VEE: Motor, "S2", "S3" and "S7"
VEE
TO RESERVOIR
TO RESERVOIR
PILOT CHECK VALVE
PILOT CHECK VALVE
ENERGIZED
S7
S5
2000 P.S.I. RELIEF VALVE
LEFT WING
RIGHT WING
S6
2000 P.S.I. RELIEF VALVE
2000 P.S.I. RELIEF VALVE
ENERGIZED
S3
2000 P.S.I. RELIEF VALVE
RESERVOIR
2000 P.S.I. RELIEF VALVE
INLET FILTER
PU
DUAL ACTING PILOT CHECK VALVE
ENERGIZED
S2
S1
LIFT CYLINDER
LOWER ADJUSTMENT

FIGURE 1-10

V-68 UNIT COMPONENTS

MOTOR (4-1/2")

Iskra - Two terminal

The Iskra motor is a four pole, electromagnet motor which consists primarily of a 4-1/2" diameter solid steel frame, armature, brushes, field coils and pole pieces. This motor can be used on vehicles with either the common negative ground electrical system or the positive ground electrical system.

HYDRAULIC PUMP

The pump in a hydraulic system employs an external source of power to apply a force to a liquid. A pump develops no power of its own. It simply transfers power from an external source (the electric motor on the V-68 unit) to the liquid in the hydraulic system.

The basic operating principles of the hydraulic pump used in the V-68 unit is quite simple. Figure 1-11 illustrates the basic components of a positive displacement gear type pump and their functions. The pumping action takes place within the pump chamber which is connected to the reservoir by the intake line. The pump chamber has an outlet line in which the liquid under motion and pressure leaves the pump to perform work.

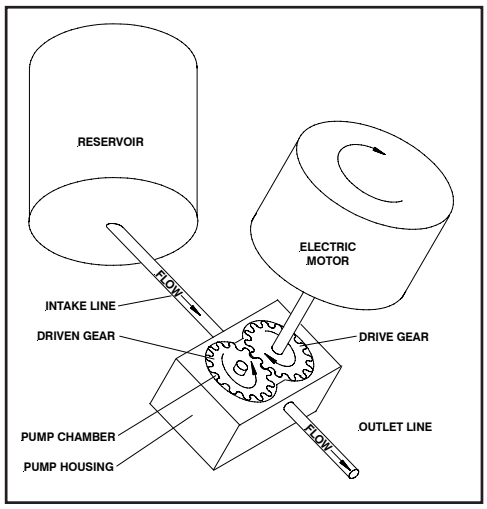

FIGURE 1-11

PRESSURE RELIEF VALVE

A basic pressure relief valve is shown in Figure 1-12. It consists of a poppet valve and a valve spring. Both are located in a passage which connects the inlet passage to the outlet passage. The poppet valve is normally held closed by the valve spring, sealing the connecting passage from the pressurized outlet passage. The poppet valve, being a piston, is exposed to the pressurized hydraulic fluid in the outlet passage. Whenever the hydraulic pressure against the poppet valve becomes greater than the pressure being exerted on the poppet valve from the opposite direction by the valve spring, the poppet valve will open. This allows some of the pressurized hydraulic fluid to flow through the connecting passage to the non pressurized inlet passage. The effect is to lower the pressure in the outlet passage which will allow the valve spring to close the poppet valve again.

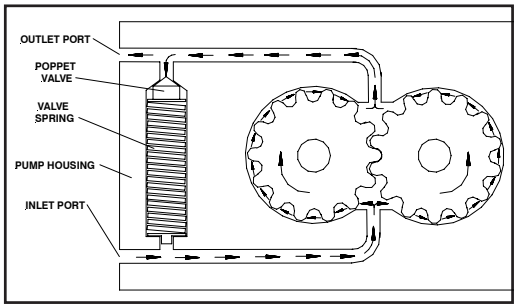

FIGURE 1-12

Under a condition, such as when a hydraulic cylinder is extended to the end of its stroke, eliminating additional space for the pressurized hydraulic oil to be pumped into, the alternate opening and closing of the poppet valve controls the pump's pressure output and provides an escape for the pressurized hydraulic fluid.

The pressure relief valve used in the V-68 pump, while more sophisticated than the one described, functions in the same manner. The pump pressure relief valve may be pre-set and not adjustable to the specified pressure of 2000 P.S.I.

SOLENOID VALVES

Hydraulic valves are simple in concept and all have the same basic function: Control the direction of oil flow.

Each Solenoid Valve consists of two components: the Cartridge and the Coil.

Cartridge

The Cartridge consists of the hydraulic valve mechanism and an armature which enables the valve mechanism to be operated and controlled electrically. The Cartridge is designed to screw in and out of the V-68 unit much like the typical "spark plug".

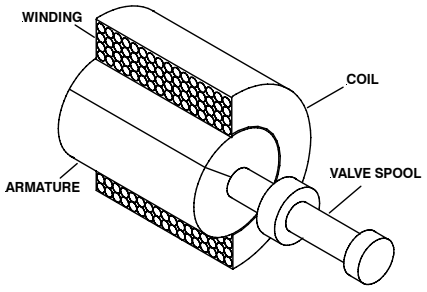

FIGURE 1-13

Coil

The Coil is the electrical component which operates the Cartridge's valve mechanism by producing magnetism which pulls the Cartridge's armature toward it. Since the armature is connected to the valve mechanism's only moving part, it is pulled by the armature.

Figure 1-13 illustrates the typical Coil. Whenever electrical current flows to the Coil, it flows through the winding, which consists of numerous turns of copper wire. The flow of current through the winding produces a magnetic field which pulls the soft iron armature further into the Coil.

The armature pulls the valve spool or poppet valve into its alternate (energized) position. Not illustrated is an integral coil spring, which is compressed when the armature is pulled by the magnetism.

When the current flow ceases, the magnetic field disappears and the compressed coil spring pushes the armature back to its original (de-energized) position.

CHECK VALVES

Check valves are very simple devices that have two basic functions: They prevent fluid from passing through them in one direction, but they allow fluid to pass through them in the opposite direction.

In the V-68 a pump check valve is used to prevent hydraulic fluid from leaking back through the pump to the reservoir.

DOUBLE ACTING PILOT CHECK VALVE

The pilot check valve is more sophisticated in that it incorporates a piston in addition to the ball, seat and spring. The pilot check valve opens a passage way using hydraulic pressure which applies force to a piston which then pushes a ball of of its seat to allow fluid to pass thru.

CROSSOVER RELIEF VALVE

When plowing snow, a snow plow can be exposed to damaging forces caused by impact with hidden obstructions, ends of curbs, etc. With power angling, these damaging forces can damage not only the snow plow but also the vehicle. The crossover relief valve has the function of protecting the snow plow system against these damaging forces under normal snow plowing conditions. The crossover relief valve, cannot protect the system from damaging forces that are too great due to abusive snow plowing conditions.

Basically, the crossover relief valve functions exactly like the previously described pump relief valve. It's designed to open at a specific pressure. In this instance, the pressure is not produced by the pump but rather by the damaging force. As an example, assume that the right corner of the plow runs into the end of a curb. The impact will attempt to collapse the right power angling cylinder. As a result, very high hydraulic pressure is produced within the cylinder. When the produced pressure is high enough, it opens the crossover relief valve, allowing the highly pressurized hydraulic fluid to flow directly to the left power angling cylinder.

When the crossover relief valve functions in this manner, the excessive pressure is released, the excessive energy produced by the impact is absorbed, and the result is only a change in angled position of the plow.

The crossover relief valve is factory set to the specified pressure of 2000 P.S.I. this setting is non-adjustable.

SOLENOID SWITCH

The V-68 motor requires more current or amperage to operate than the vehicle wiring, vehicle ignition switch or toggle switches have the capacity to handle. The solenoid switch is essentially a heavy duty switch with the capacity to handle the heavy current required by the motor. It is closed electrically by the solenoid to convey the heavy current directly from the vehicle battery via heavy gauge electrical cable. The solenoid, which functions essentially the same as the previously described solenoid valves, receives its low amperage current at the proper times via the wiring harness. This solenoid must be grounded to operate properly.

FILTERS

Cleanliness is perhaps the single most important ingredient in assuring a hydraulic system's reliability. Should the hydraulic fluid become contaminated, malfunction and permanent damage to the hydraulic system may occur. For this reason, the V-68 unit is equipped with a filter system consisting of:

- A fine screen strainer on the reservoir pump inlet.

With this system, the hydraulic fluid is filtered as it leaves the reservoir on its way to the pump. Periodic cleaning of the filter screen is achieved be removing the reservoir tank shown in the dis-assembly section.

IMPORTANT:

Should the hydraulic fluid become contaminated, it will be necessary to replace all the hydraulic oil in the system. The complete system (hydraulic unit, power angling cylinders and hoses) should be flushed. Flush the system with Meyer Hydra-Flush™ Fluid M-2.

SECTION 2 - DIAGNOSIS

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DIAGNOSTIC FLOW CHART FOR V-68 Unit

These charts are intended to be used as an aid in diagnosing problems on the V-68 unit. They are not a substitute for factory training and experience. Be certain to read the General Information and Testing Tips sections before attempting any troubleshooting.

IMPORTANT: Maintenance and repairs must be performed with the moldboard on the ground.

General Information

Before any troubleshooting is started, make certain the following conditions are met.

1. The power angling cylinders must be installed correctly on to the plow assembly. The left cylinder (Driver's side) has two hoses. Attach the left wing 1/4" hose to the rod or live end of left ram. Attach the left wing 3/8" hose to the fixed end of left ram. Attach the right wing 1/4" hoseto the rod or live end of right ram. Attach the right wing 3/8" hose to the fixed end of right ram. See Figure 1
2. The solenoid wires must be on their proper coil. See Figure 2

Figure 1

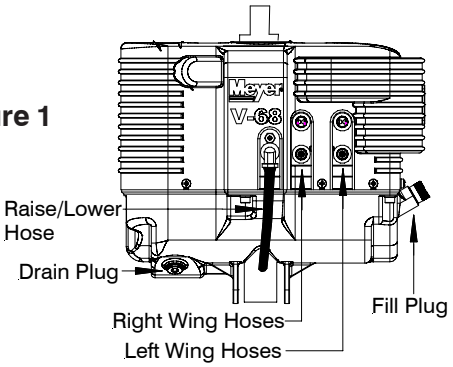
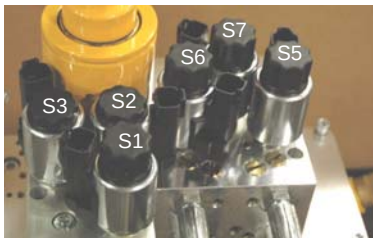


Figure 2



Hydraulic Solenoid Color Code:
S1 (Red and Black w/white stripe)
S2 (Black and Black w/white stripe)
S3 (Green and Black w/white stripe)
S5 (Yellow and Black w/white stripe)
S6 (Blue w/white stripe and Black w/white stripe)
S7 (Purple and Black w/white stripe)

TESTING TIPS

Many tests do not require removing the Electro Lift® unit from the vehicle. However, more thorough testing can be performed using the Meyer Test Stand which allows direct pressure and amperage readings.

1. Using a screwdriver or other small tool to check for magnetism of the solenoid coils "S1", "S2", "S3", "S5", "S6" and "S7". Place the tool on the nut securing the coil and have an assistant operate the switch. You should feel strong magnetic attraction.
2. Use a test light or volt meter to determine whether there is power at the harness.
3. When determining AMP draw of the motor, always obtain the highest value possible, i.e, at maximum raise or maximum angle with motor running.
4. The pump shaft of a good pump can be turned smoothly using two fingers. If it can't be turn easily, the pump is too tight and must be replaced.
5. Pump pressure can be measured at an angle hose (note pressure at full angle) Note: The V-68 Unit has a non adjustable pressure relief valve.
6. Flush the complete system including unit, hoses and power angling rams with Meyer Hydra-Flush™ Fluid M-2.

V-68 CONTROLLER OPERATION

- The snow plow should only be in operation when the vehicle ignition switch and the control switch are in the "ON" position. Care should be taken to insure that the control switch is kept dry and free from moisture during normal operation.
- When the control switch is turned "On," lights illuminate the location of the individual touch pads for the functions of the snow plow: (Up), (Angle Left),(Left Extend), (Left Retract), (Angle Right), (Right Extend), (Right Retract), (Scoop), (Vee) and (Down).
- Lowering of the snow plow an inch at a time is possible by tapping the down arrow in short intervals. Holding down the down arrow will activate a float light located in the upper right corner of the control switch. This light indicates the snow plow is now in the Lower/Float position. In this position the snow plow will be able to follow the contour of the road and the snow plow can also be angled to the left or right. Touching the up arrow automatically cancels the Lower/Float position.
- While angling left or right or raising the snow plow if the button is pressed for more than six seconds the operation will be cancelled. This feature eliminates unnecessary amp draw from the vehicle charging system.
- This switch is self diagnosing. The monitor light is located in the upper left corner next to the float light of the control switch. When the monitor light turns on and begins to flash the control switch is sensing a problem with a specific coil/connection on the hydraulic unit. The label below is on the back side of your control switch.
- Reset is accomplished by turning off the ignition switch or by turning the power switch off momentarily and then back on. If the monitor light is still illuminated after attempts to reset the switch have failed, contact your nearest authorized Meyer Distributor for repairs.

V-68	RAISE	LOWER	RIGHT RETRACT	RIGHT EXTEND	LEFT RETRACT	LEFT EXTEND	ANGLE RIGHT	ANGLE LEFT
MOTOR	X		X	X	X	X	X	X
S1	X	X						
S2	X	X						
S3		X	X	X			X	
S5						X		
S6				X				
S7			X		X			

V-68 Operation Chart

V-68	RAISE	LOWER	RIGHT RETRACT	RIGHT EXTEND	LEFT RETRACT	LEFT EXTEND	ANGLE RIGHT	ANGLE LEFT
MOTOR	X		X	X	X	X	X	X
S1	X	X						
S2	X	X						
S3		X	X	X			X	
S5						X		
S6				X				
S7			X		X			

S1 Solenoid Failure
Red and Black w/White Stripe

No Raise or Lower

V-68	RAISE	LOWER	RIGHT RETRACT	RIGHT EXTEND	LEFT RETRACT	LEFT EXTEND	ANGLE RIGHT	ANGLE LEFT
MOTOR	X		X	X	X	X	X	X
S1	X	X						
S2	X	X						
S3		X	X	X			X	
S5						X		
S6				X				
S7			X		X			

S2 Solenoid Failure
Black and Black w/White Stripe

No Raise, Lower,
Vee or Scoop

Press Vee Function
the plow will retract
right wing

V-68	RAISE	LOWER	RIGHT RETRACT	RIGHT EXTEND	LEFT RETRACT	LEFT EXTEND	ANGLE RIGHT	ANGLE LEFT
MOTOR	X		X	X	X	X	X	X
S1	X	X						
S2	X	X						
S3		X	X	X			X	
S5						X		
S6				X				
S7			X		X			

S3 Solenoid Failure
Green and Black w/White Stripe

No Lower, Right Retract , Right Extend, Right Angle, Vee or Scoop

Press Right Retract the plow will retract left wing

Press Angle Right the plow will angle left

V-68	RAISE	LOWER	RIGHT RETRACT	RIGHT EXTEND	LEFT RETRACT	LEFT EXTEND	ANGLE RIGHT	ANGLE LEFT
MOTOR	X		X	X	X	X	X	X
S1	X	X						
S2	X	X						
S3		X	X	X			X	
S5						X		
S6				X				
S7			X		X			

S5 Solenoid Failure
Yellow and Black w/White Stripe

No Left Extend
or Scoop

Press Left Extend
the plow will
angle Left

V-68	RAISE	LOWER	RIGHT RETRACT	RIGHT EXTEND	LEFT RETRACT	LEFT EXTEND	ANGLE RIGHT	ANGLE LEFT
MOTOR	X		X	X	X	X	X	X
S1	X	X						
S2	X	X						
S3		X	X	X			X	
S5						X		
S6				X				
S7			X		X			

S6 Solenoid Failure
Blue w/White Stripe and
Black w/White Stripe

No Right Extend or Scoop

Press Right
Extend the plow
will angle Right

V-68	RAISE	LOWER	RIGHT RETRACT	RIGHT EXTEND	LEFT RETRACT	LEFT EXTEND	ANGLE RIGHT	ANGLE LEFT
MOTOR	X		X	X	X	X	X	X
S1	X	X						
S2	X	X						
S3		X	X	X			X	
S5						X		
S6				X				
S7			X		X			

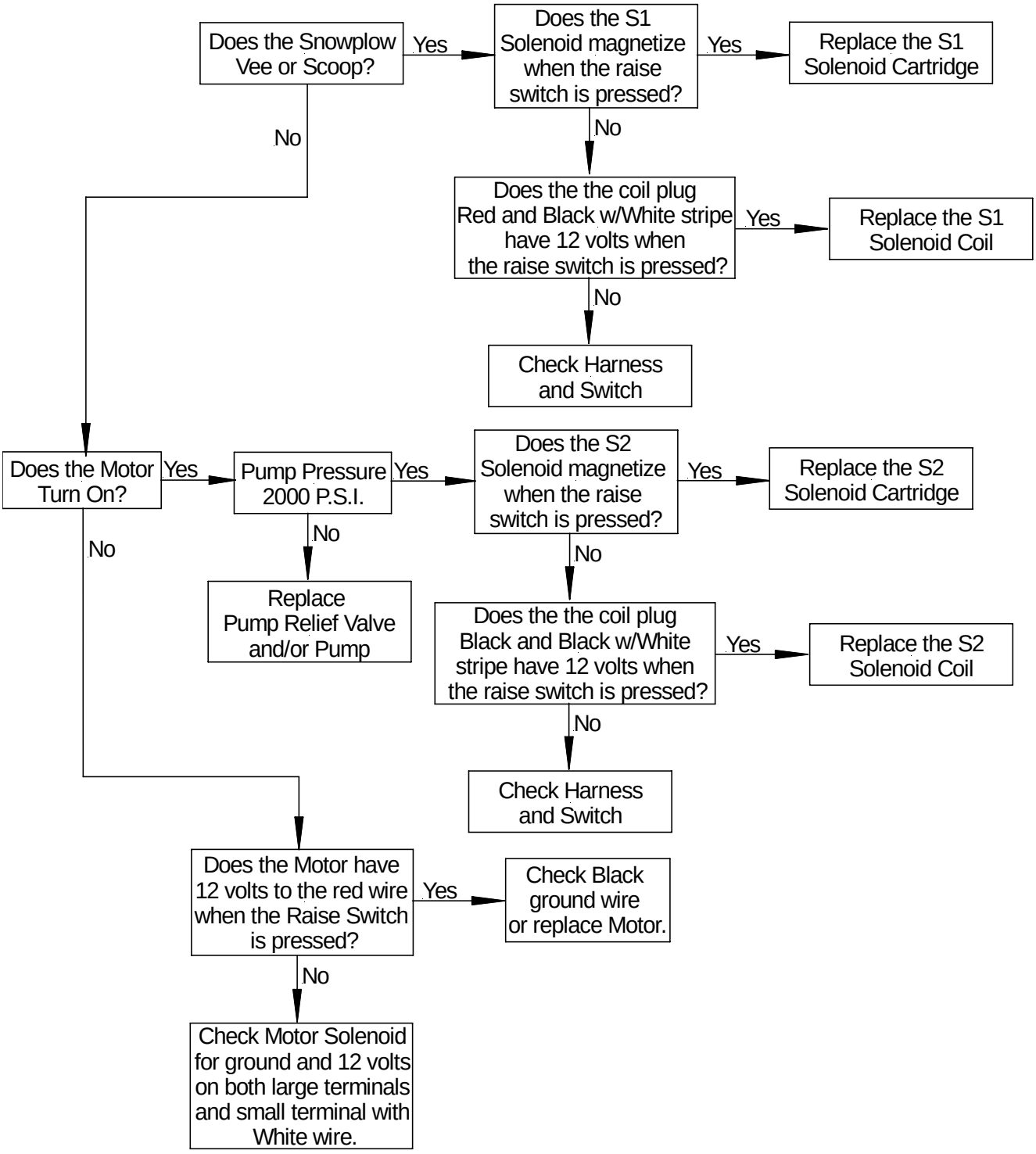
S7 Solenoid Failure
Purple and Black w/White Stripe

No Right Retract , Left Retract, Vee or Scoop

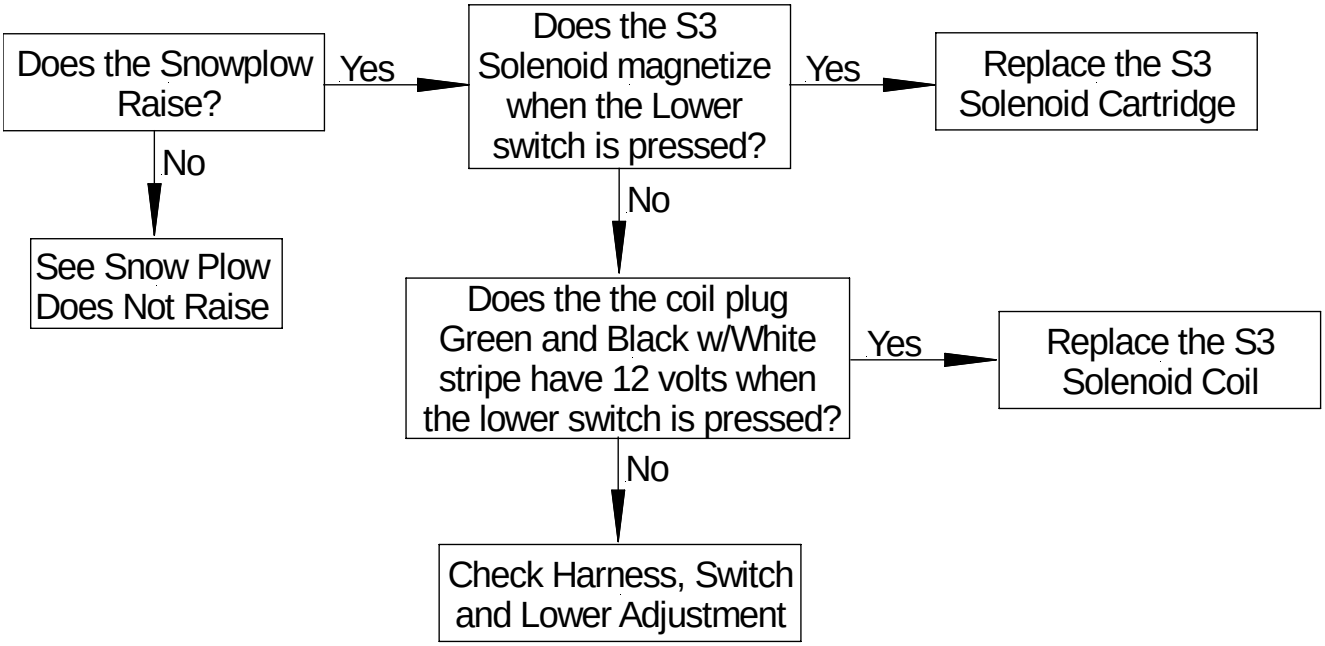
Press Right Retract the plow will angle right

Press Left Retract the plow will angle left

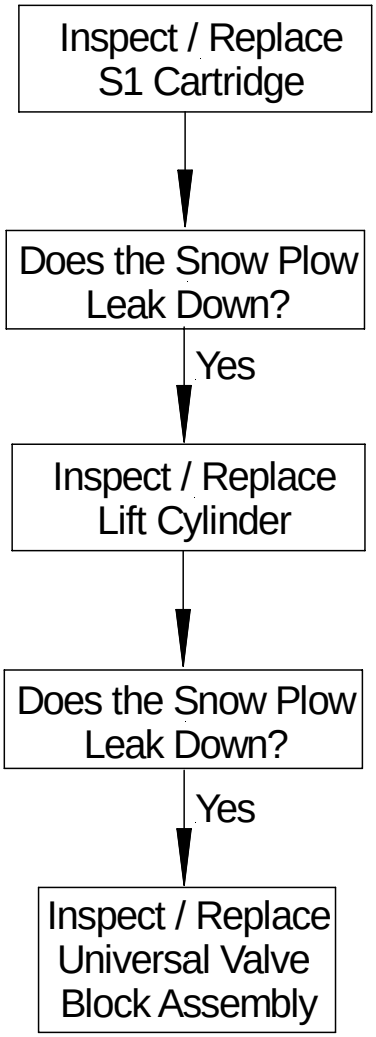
Snow Plow will not Raise



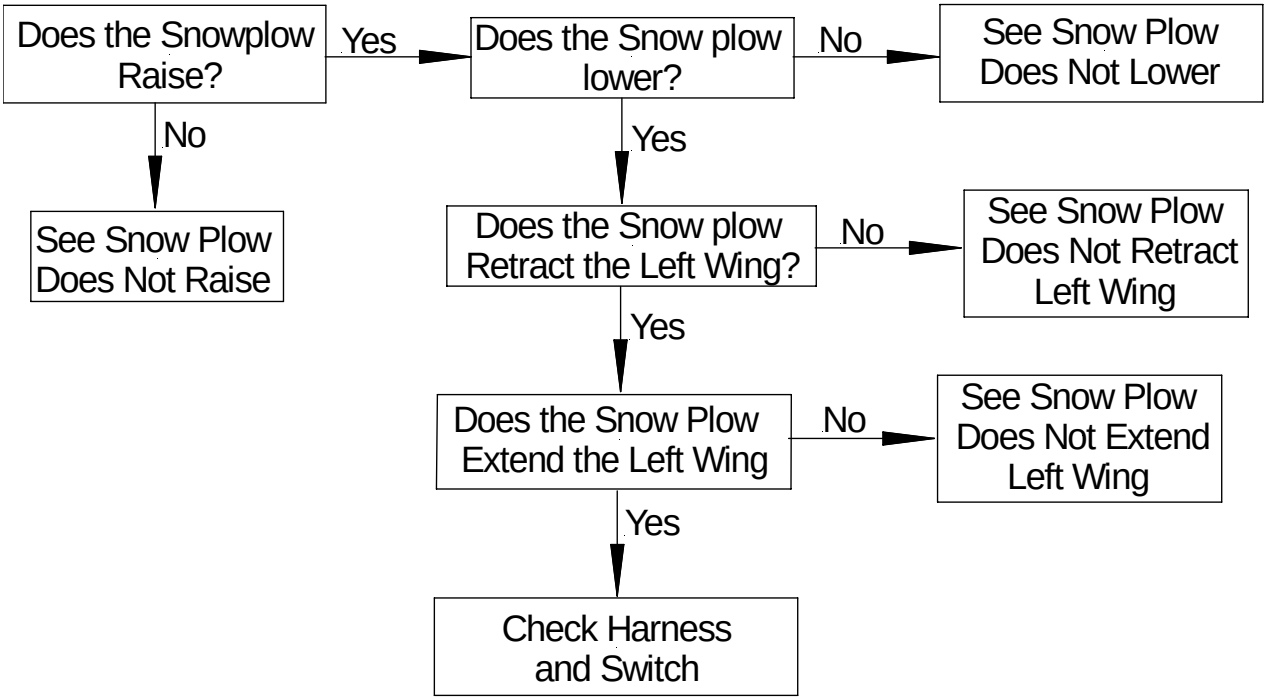
Snow Plow will not Lower



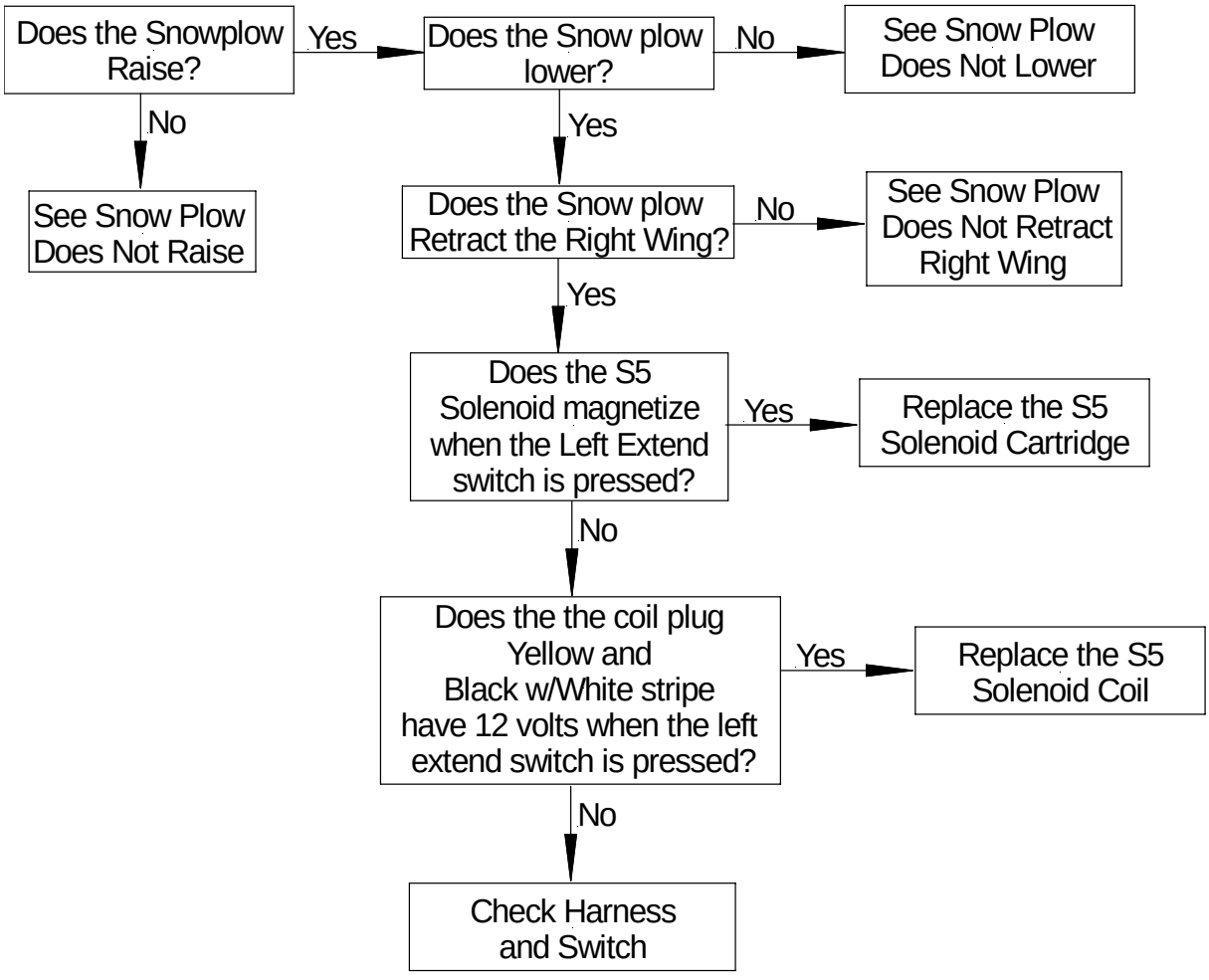
Snow Plow Leaks Down



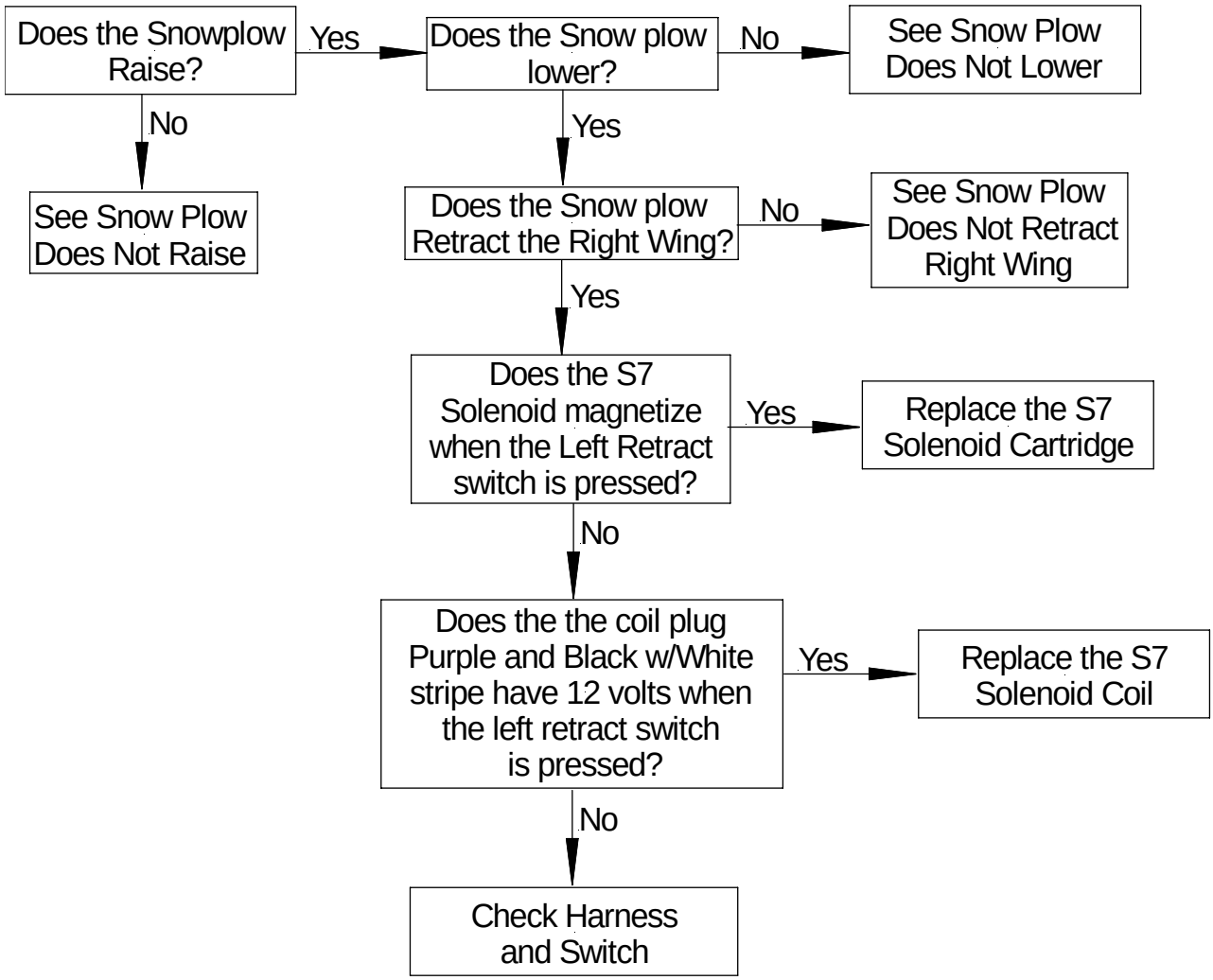
Snow Plow will not Angle Left



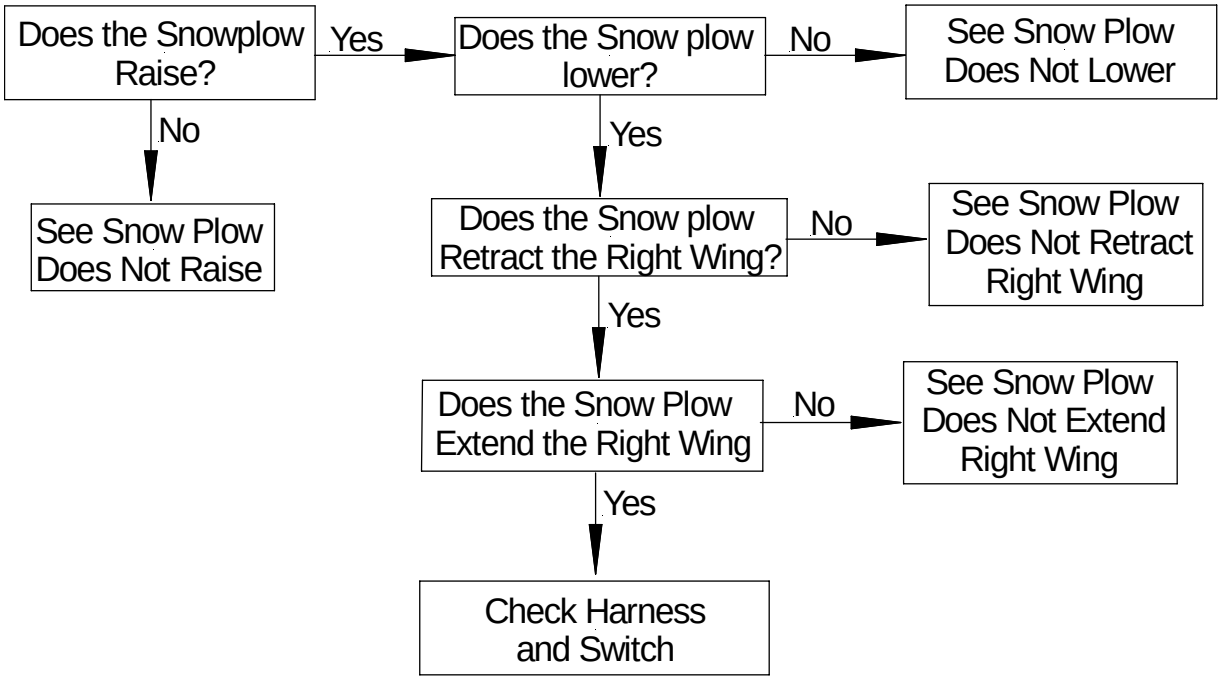
Snow Plow will not Extend the Left Wing



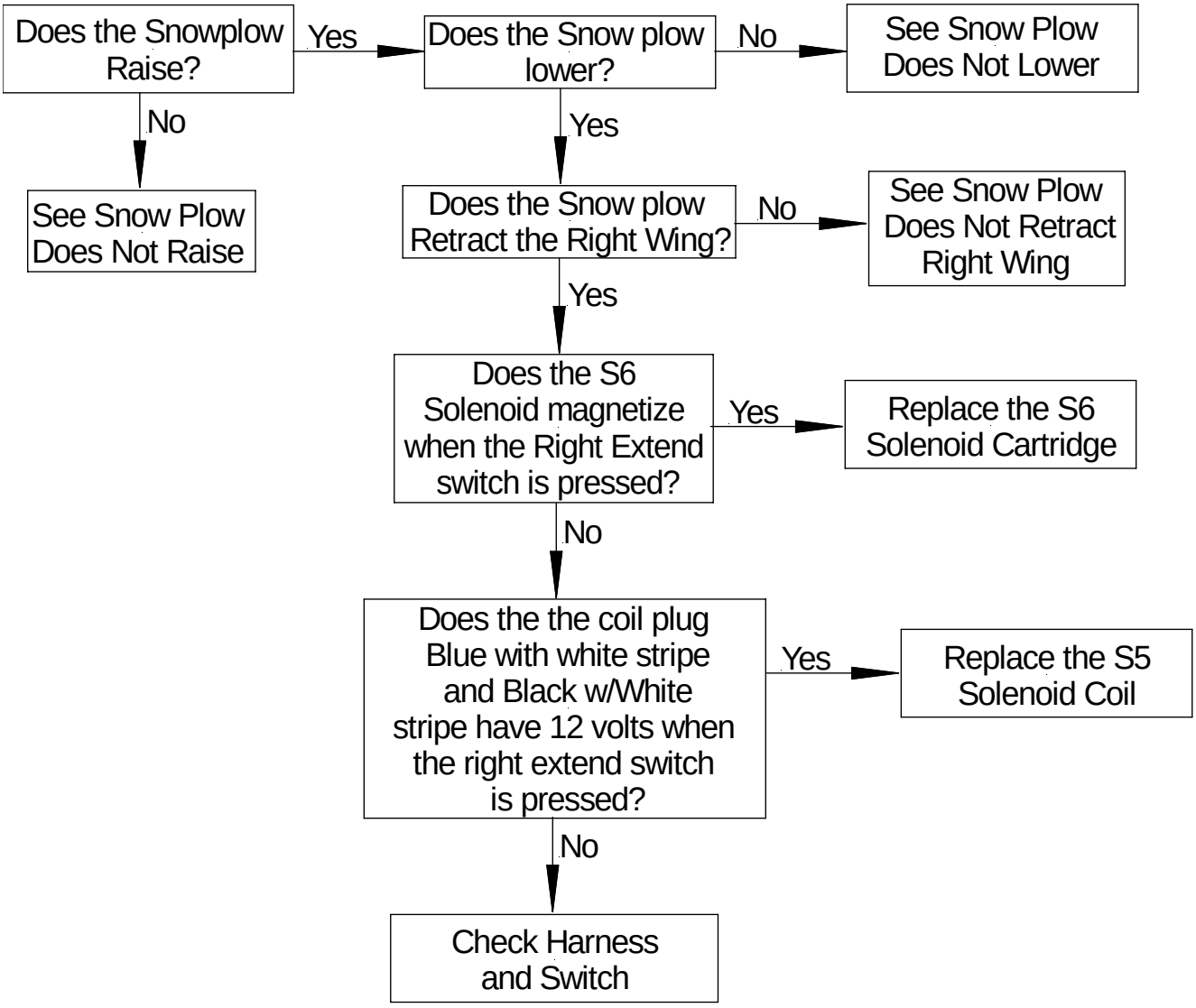
Snow Plow will not Retract the Left Wing



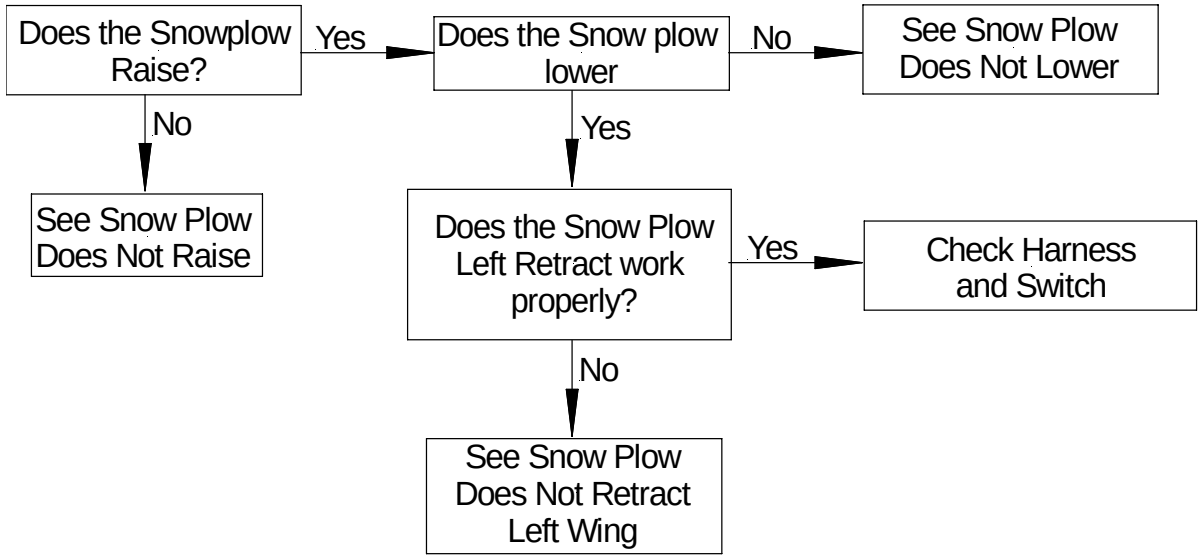
Snow Plow will not Angle Right



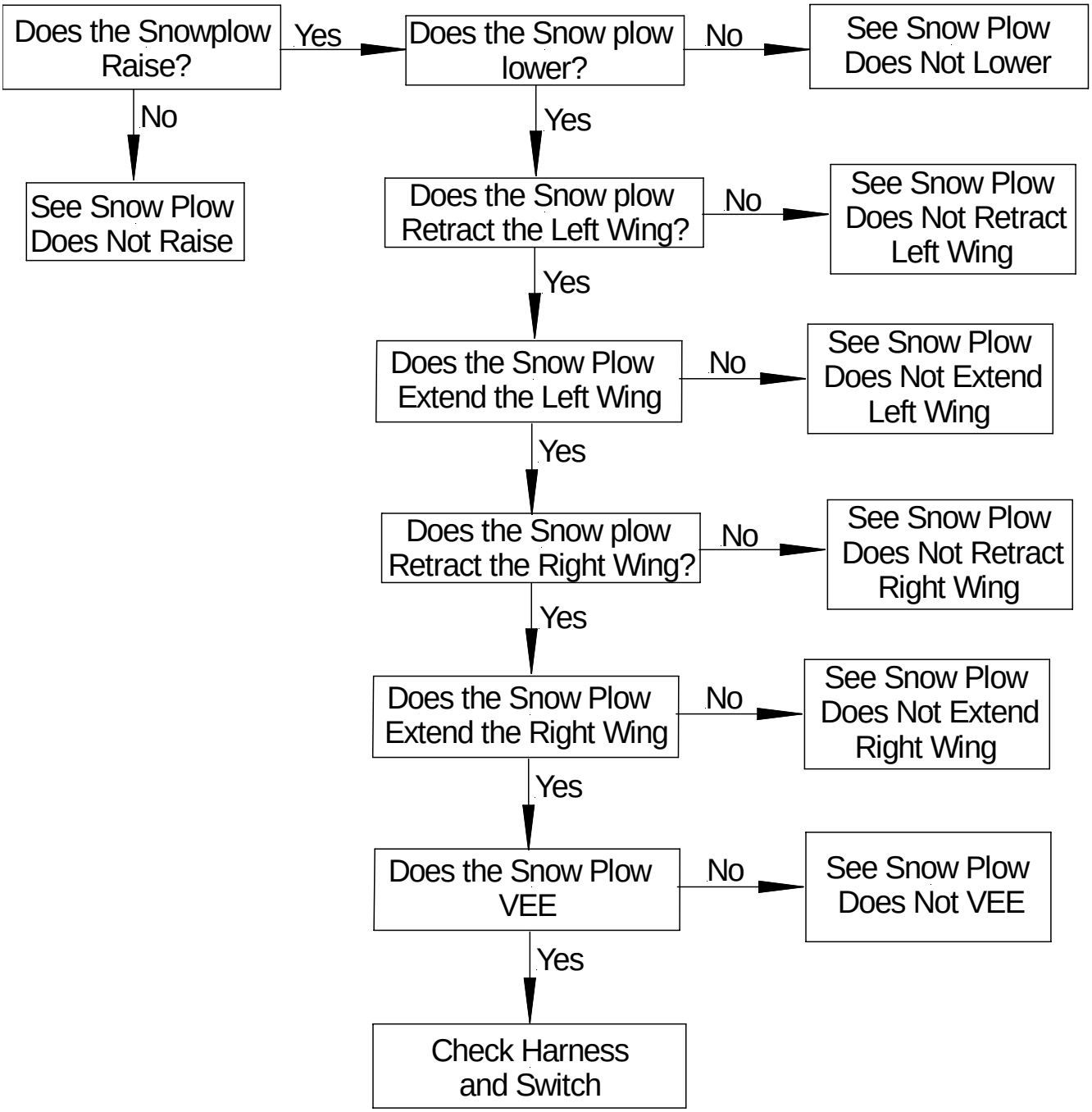
Snow Plow will not Extend the Right Wing



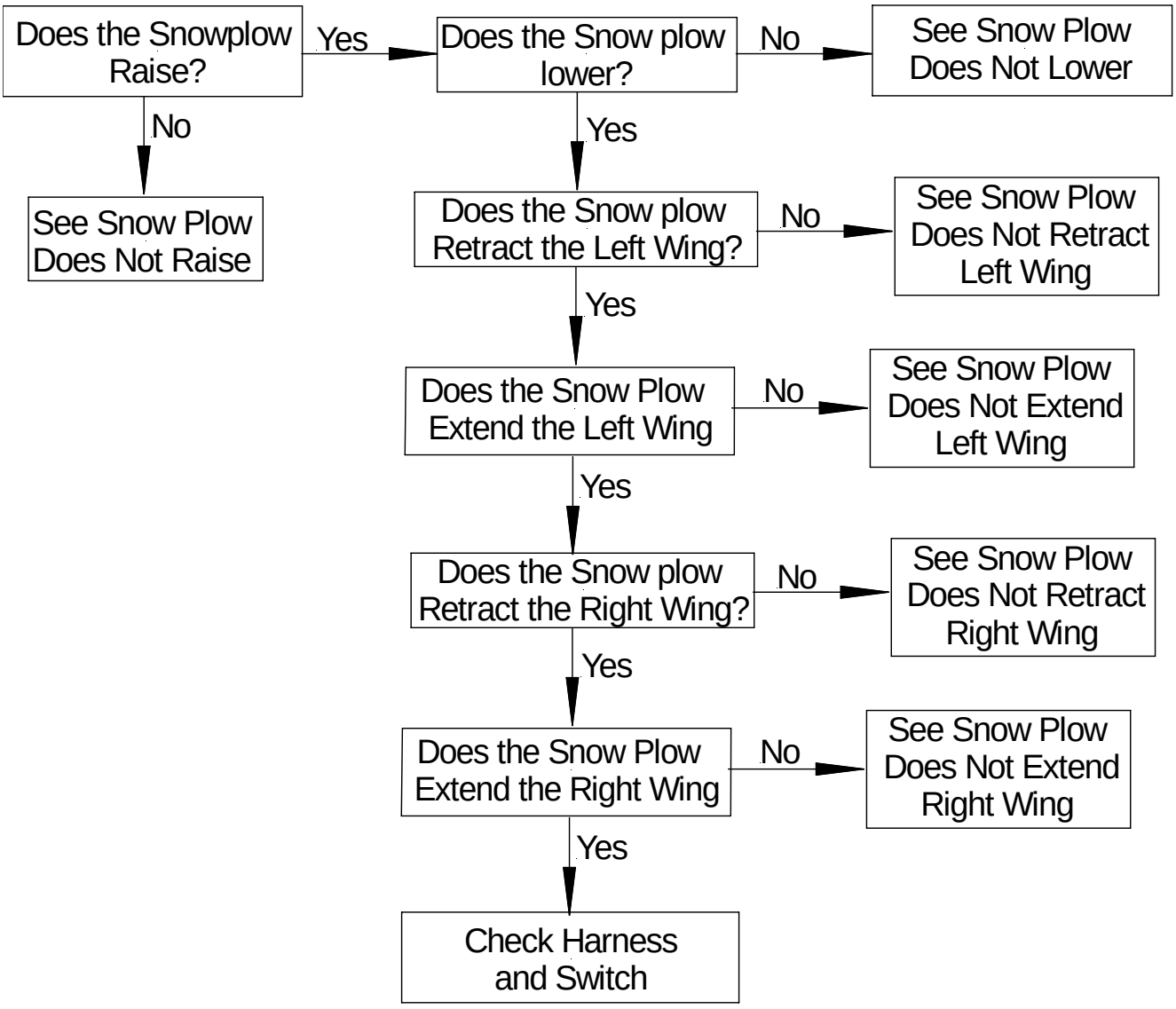
Snow Plow will not Retract the Right Wing



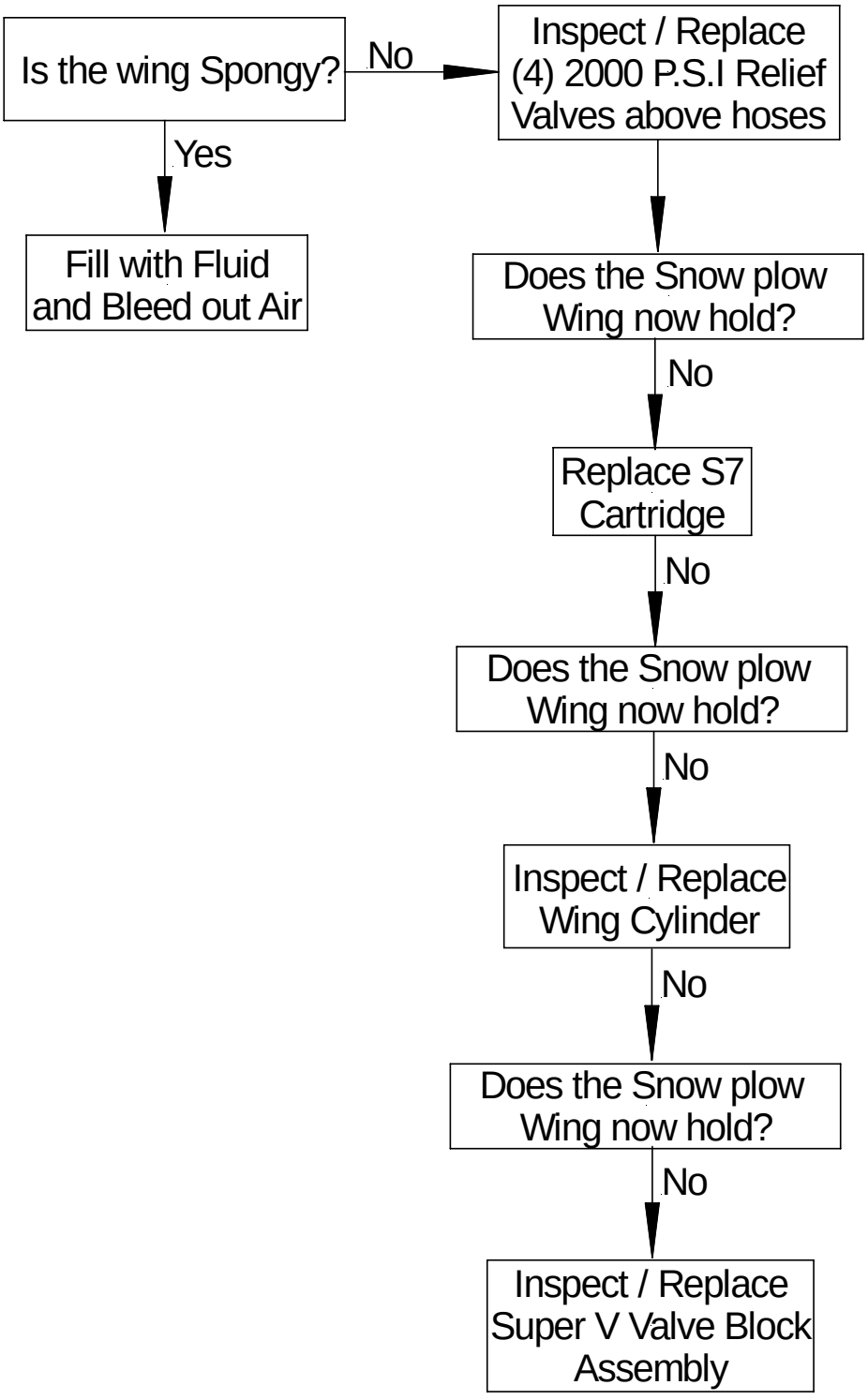
Snow Plow will not Scoop



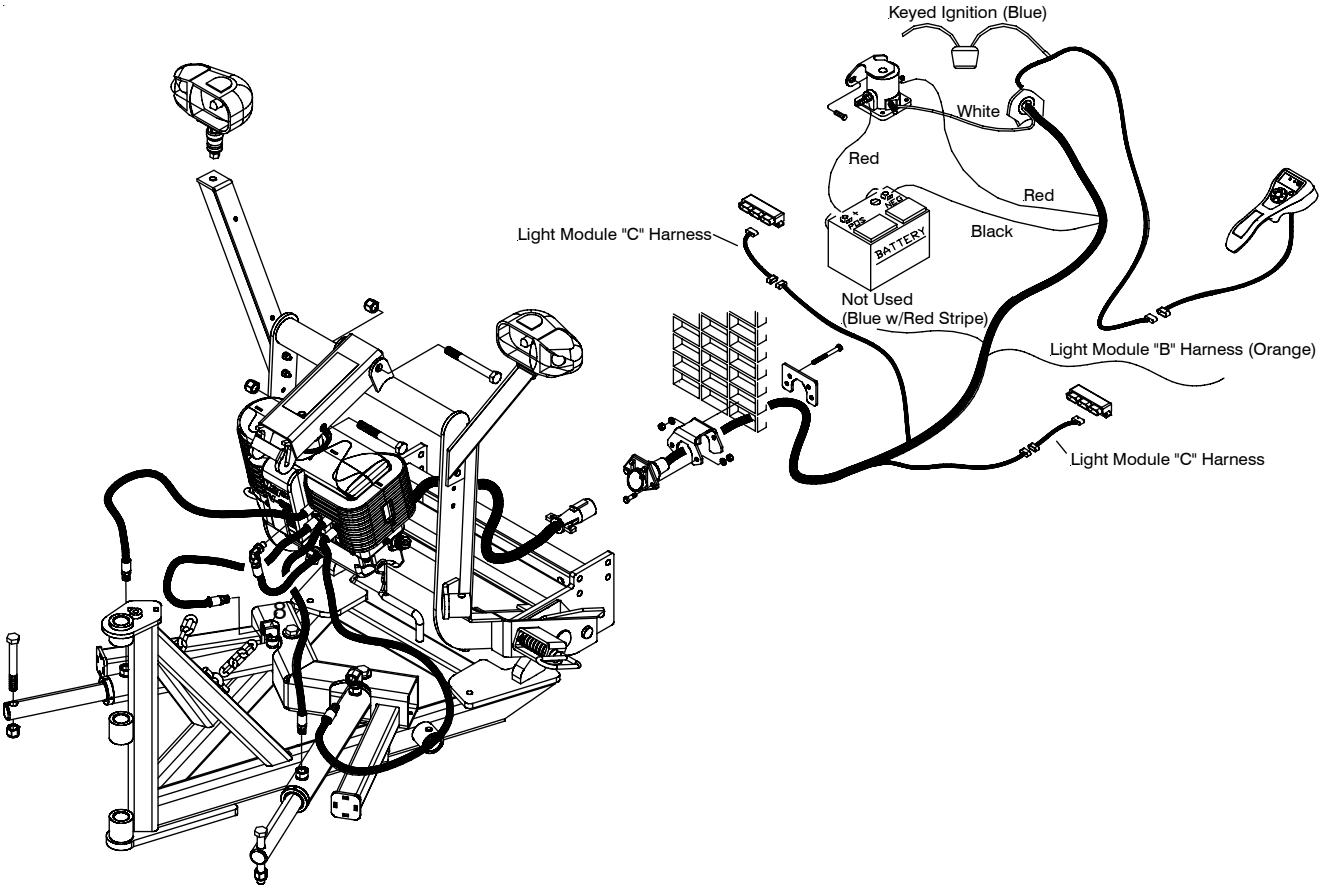
Snow Plow will not VEE

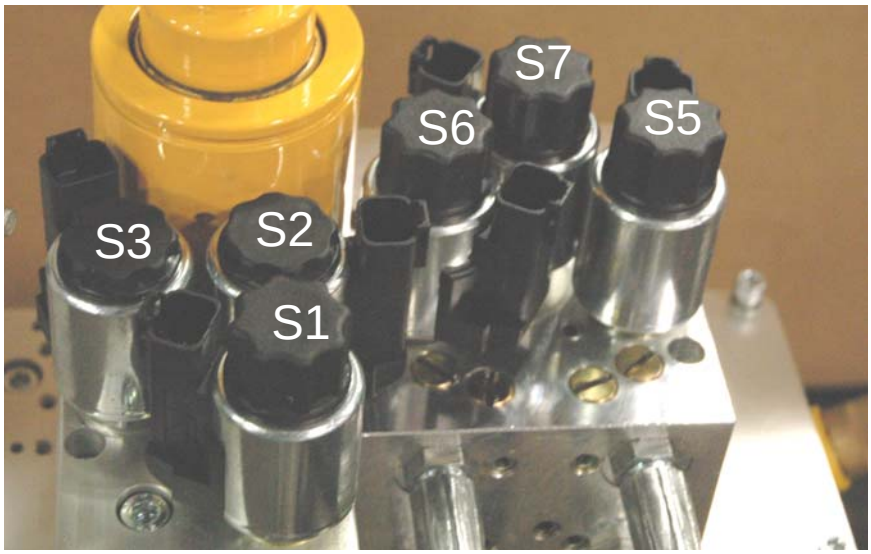


Snow Plow Wing Does Not Hold Position



V-68 Wiring





Hydraulic Solenoid Color Code:
S1 (Red and Black w/white stripe)
S2 (Black and Black w/white stripe)
S3 (Green and Black w/white stripe)
S5 (Yellow and Black w/white stripe)
S6 (Blue w/white stripe and Black w/white stripe)
S7 (Purple and Black w/white stripe)

SECTION 3 - REPAIR PROCEDURES

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ELECTRO LIFT® .....

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GENERAL INFORMATION

Using the proper guidelines and precautions, the V-68 unit is easy to disassemble and reassemble. Figure 3-1 (page 38) is an exploded view which applies to the V-68. It should be used as the primary reference for proper reassembly. Where necessary, this section includes additional information, photographs and illustrations to assure proper and efficient repairs.

UNIT DISASSEMBLY AND REASSEMBLY

Many repair procedures, including removal and replacement of the “S1”, “S2”, “S3”, “S5”, “S6” and “S7” Solenoid Valves, can be accomplished without removing the unit from the vehicle. While Figures 3-3 through 3-82 show the unit clamped in a vise, make all possible repairs on the vehicle when possible.

NOTE: Pump Assembly should not be disassembled since it cannot be serviced.

Disassembly

See Figures 3-3 through 3-56 (pages 40-53).

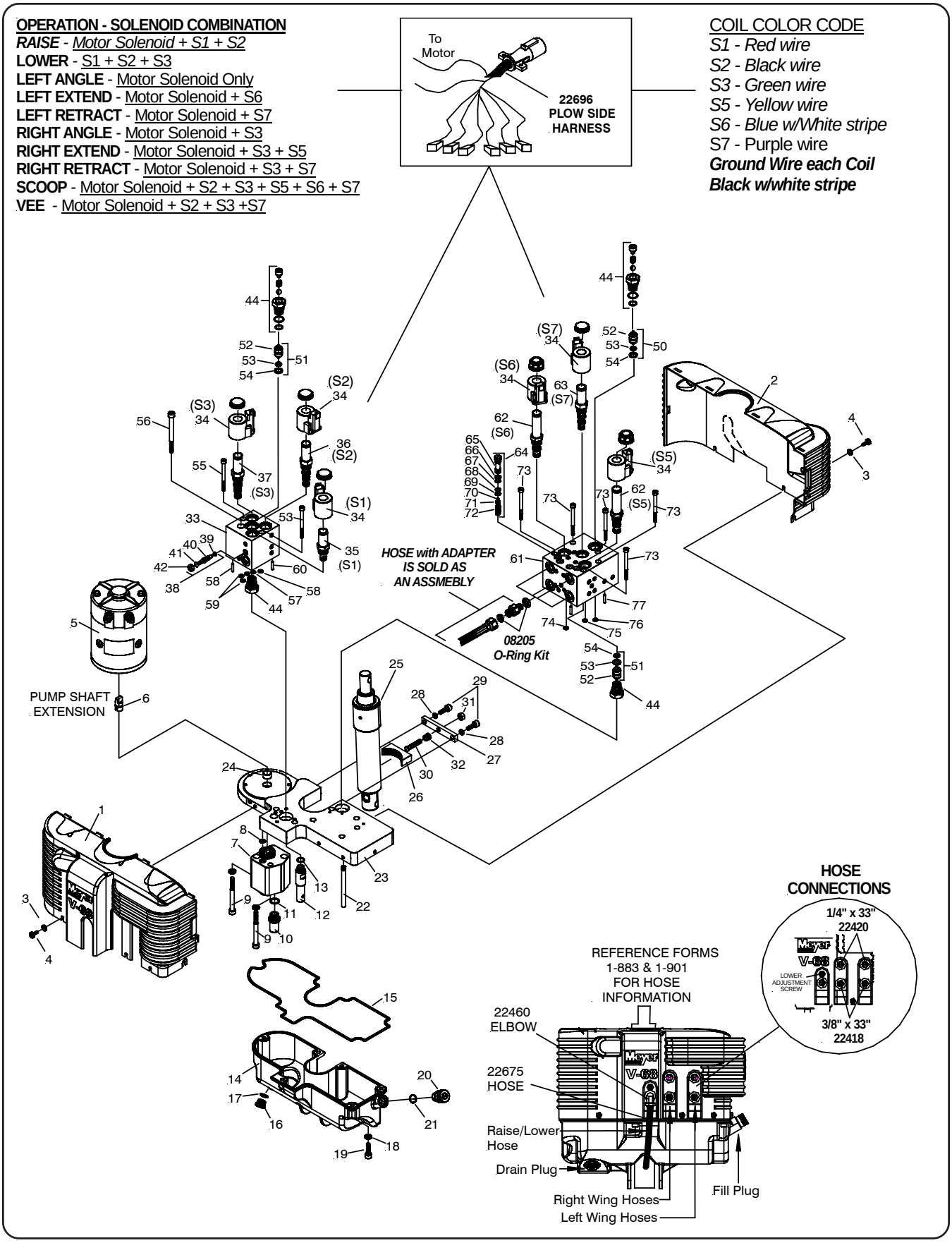
Reassembly

See Figures 3-57 through 3-82 (pages 53-59) for important reassembly points.

Additional Reassembly Points

O-Rings- Coat liberally with hydraulic fluid and position carefully to minimize possibility of damage during assembly.

Fasteners- Torque all fasteners which are specified to insure proper reliability and prevent damage due to over-tightening.



V-68
Exploded View

FIGURE 3-1

PARTS & INSTALLATION INSTRUCTIONS
V-68 ELECTRO-LIFT® UNIT

PARTS LIST

ITEM	V-68	QTY	DESCRIPTION
	15009	1	**Lift Assembly (Unit Only) 12V**
1	15011	1	• Front Cover
2	15010	1	• Rear Cover
	15046	1	• Cover Hardware Kit
3	---------	6	•• Flatwasher M6
4	---------	6	•• Allen Head M6-1p x 14mm
5	15727	1	• Motor - 12 Volt (2 Terminal)
6	15023	1	• Pump Shaft Extension
7	15021	1	• Pump Assy.
8	---------	1	••O-ring
9	15029	2	• Allen Head M8-1.25p x 80mm
10	15022	1	• Pump Filter Assy.
11	---------	1	••O-ring
12	15025	1	• Kit - Pump Relief Valve
13	---------	1	••O-ring
	15035		• **Base Tank Kit**
14	15015	1	•• Base Tank
15	15013	1	•• Base Tank Gasket
16	15014	1	•• Drain Plug
17	---------	1	•••O-ring
	15041	1	• Base Tank Hardware Kit
18	---------	6	•• Lockwasher M8
19	---------	6	•• Allen Head M8-1.25p x 25mm
20	15012	1	• Fill/Relief Valve
21	---------	1	••O-ring
22	15034	1	• Oil Return Tube
	15036		• **Base Plate Kit**
	15047	1	•• Base Plate Seal Kit
15	15013	1	••• Base Tank Gasket
21	---------	1	••• O-ring
23	15020	1	•• Base Plate
24	---------	1	•••Sleeve
25	05815	1	Lift Ram 1-3/4 x 8 sae -6
	15017	1	• Ram Clamp Assy.
26	---------	1	•• Clamp
27	---------	1	•• Clamp Bar
28	---------	2	•• Lockwasher M8
29	---------	2	•• Allen Head M8-1.25p x 20mm
30	---------	1	•• Special Bolt
31	---------	1	•• Locknut M8-1.25p
32	---------	1	•• Special Nut M-8-1.25p

Parts indented are included in assembly under which they are indented.

Master Seal Kit Part No. 15051 (includes all seal kits below)
Base Plate Seal Kit Part No. 15047
Universal Valve Block Seal Kit Part No. 15049
Super Vee Valve Block Seal Kit Part No. 15048
Pump Relief Valve @ 2000 ± 50 P.S.I. full flow. **Non Adjustable**
Cross-Over Relief Valve @ 2000 ± 50 P.S.I. full flow. **Non Adjustable**

ITEM	V-68	QTY	DESCRIPTION
33	15039	1	• **Universal Valve Block Assy.(12V)**
	15925	1	•• **"S1" Solenoid Assembly**
34	15916	1	••• Coil (12V)
35	15917	1	••• "S1" Cartridge Valve
	15928	1	••• "S1" Seal Kit
	15044	1	•• **"S2" Solenoid Assembly**
34	15916	1	••• Coil (12V)
36	15055	1	••• "S2" Cartridge Valve
	15056	1	••• "S2" Seal Kit
	15927	2	•• **"S3" Solenoid Assembly**
34	15916	1	••• Coil (12V)
37	15919	1	••• "S3" Cartridge Valve
	15930	1	••• "S3" Seal Kit
38	15950	1	••**Kit Needle Valve (Lower Adj.)**
39	---------	1	••• O-ring
40	---------	1	••• Needle Valve
41	---------	1	••• Needle Valve Retaining Ring
42	---------	1	••• Nut M6 x 1/2" nut
43	15965	2	•• **Kit Dual PO Check Valve**
44	---------	2	••• Check Valve Assembly
	NOT USED	1	••• P.O. Pilot Spool
	NOT USED	1	••• P.O. Spring
51	15031	2	•• **P.O. Pilot Spool Assy.**
52	---------	2	••• Spool
53	---------	1	••• Inner O-ring
54	---------	1	••• Outer O-ring
55	15024	2	•• Allen Head M6-1p x 70mm
56	15030	1	•• Allen Head M8-1.25p x 90mm
	15050	1	•• O-ring/Dowel Pin Kit
57	---------	1	••• O-ring
58	---------	1	••• O-ring
59	---------	3	••• O-ring
60	---------	2	••• Dowel Pin
61	15038	1	• **"V" Valve Block Assy.(12V)**
	15926	1	•• **"S5" & "S6" Solenoid Assembly**
34	15916	1	••• Coil (12V)
62	15918	1	••• "S5" & "S6" Cartridge Valve
	15929	1	••• "S5" & "S6" Seal Kit
	15987	1	•• **"S7" Solenoid Assembly**
34	15916	1	••• Coil (12V)
63	15958	1	••• "S7" Cartridge Valve
	15930	1	••• "S7" Seal Kit
64	15033	4	•• **Relief Valve Assy.**
65	---------	4	••• Body
66	---------	4	••• O-ring
67	---------	4	••• O-ring
68	---------	4	••• O-ring
69	---------	4	••• O-ring
70	---------	4	••• Ball
71	---------	4	••• Ball Seat
72	---------	4	••• Spring
73	15024	5	•• Allen Head M6-1p x 70mm
	15050	1	•• O-ring/Dowel Pin Kit
74	---------	1	••• O-ring
75	---------	1	••• O-ring
76	---------	3	••• O-ring
77	---------	2	••• Dowel Pin

DISASSEMBLY - V-68

FIGURE 3-3
Remove three phillips head screws from the front of cover.

FIGURE 3-4
Remove one phillips head screw from the side of cover.

FIGURE 3-5
Remove two phillips head screw from the back of cover Carefully press in the six tabs holding the front and rear covers together and pull the covers apart..

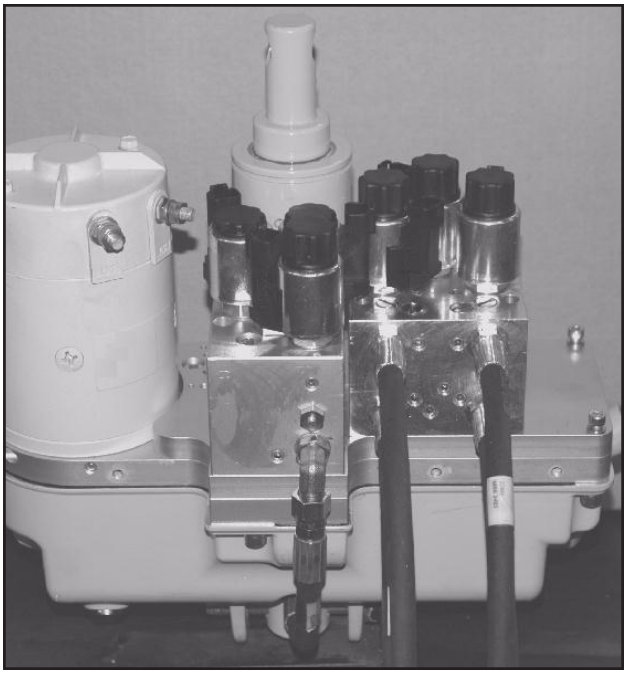


FIGURE 3-6
Remove two 1/4” hoses and two 3/8” hoses and fittings from the Super V valve block assembly and remove one 1/4” hose and fitting from the universal valve block assembly.

DISASSEMBLY - V-68

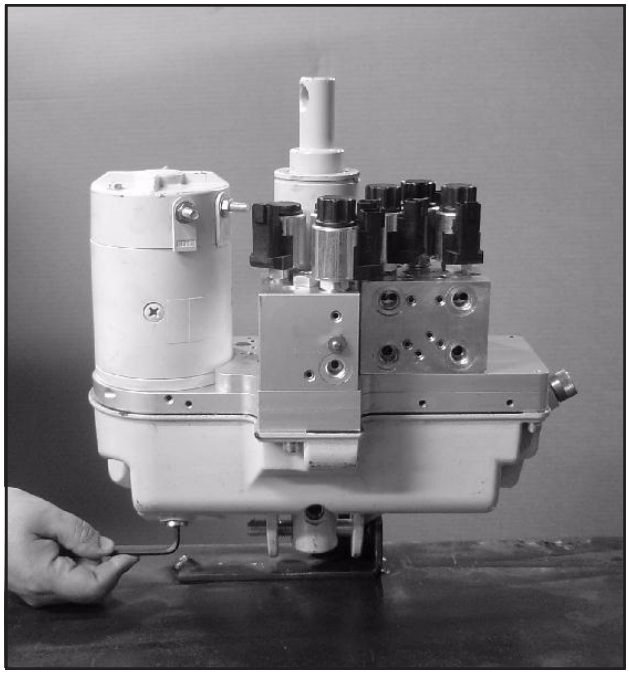


FIGURE 3-7
Remove Drain Plug using a 8mm allen wrench and drain all the hydraulic fluid from the Base Tank.

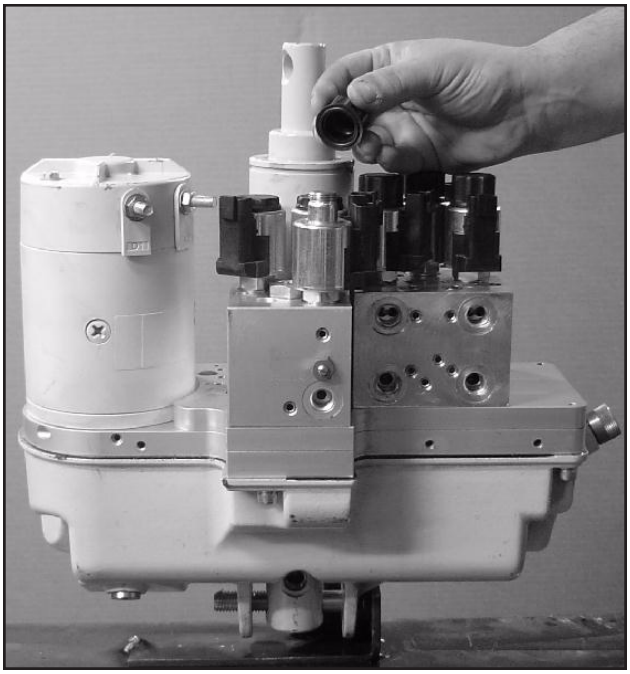


FIGURE 3-8
Remove the “S1” Coil using your hand or carefully use pliers.

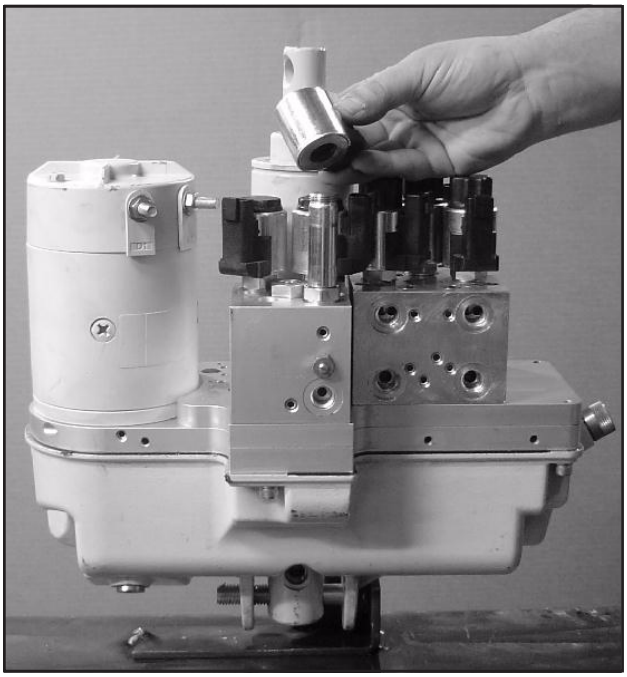


FIGURE 3-9
Coil removed from the “S1” Cartridge.

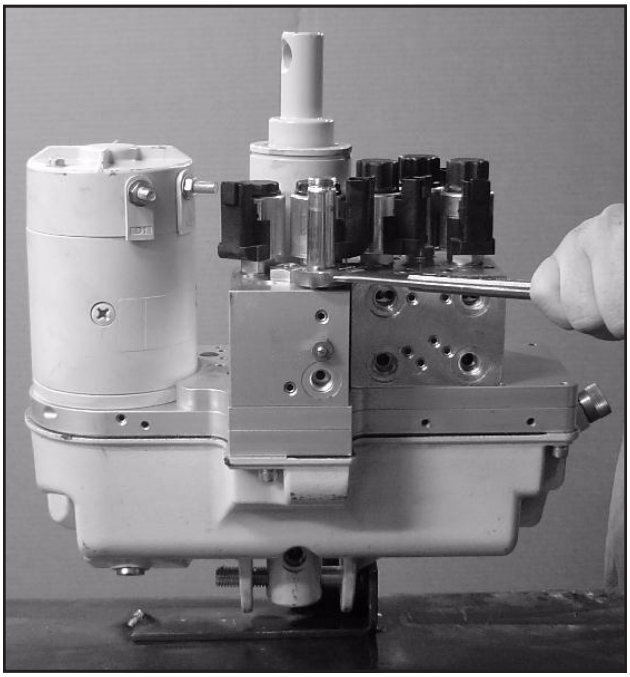


FIGURE 3-10
The “S1” Cartridge is removed using a 7/8" wrench or deep well socket.

DISASSEMBLY - V-68

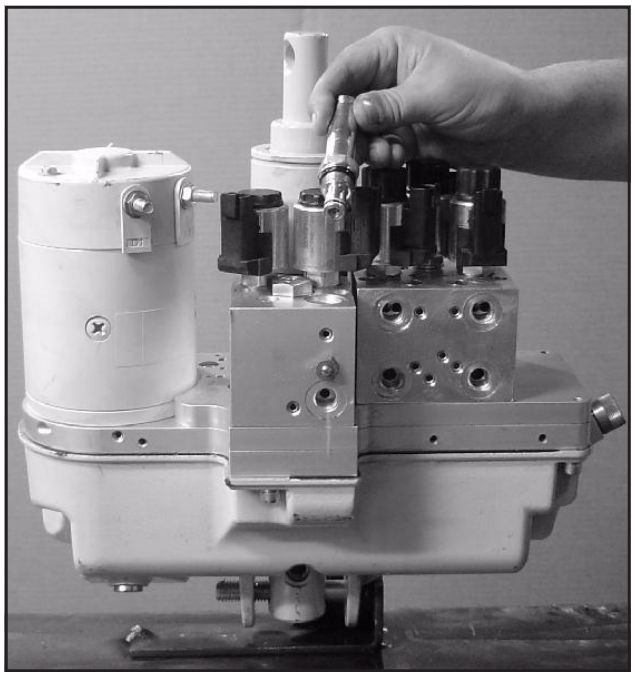


FIGURE 3-11
The “S1” Cartridge is removed. Clean by soaking cartridge in cleaning solvent.

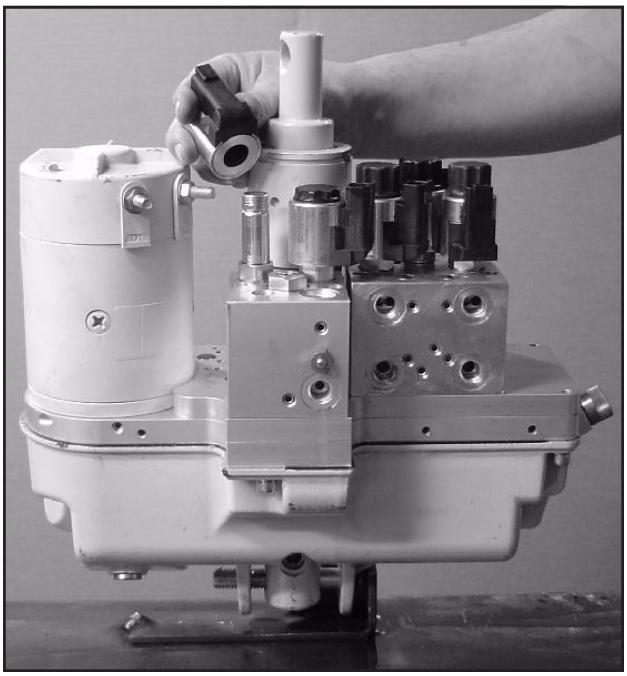


FIGURE 3-12
Coil removed from the “S3” Cartridge.

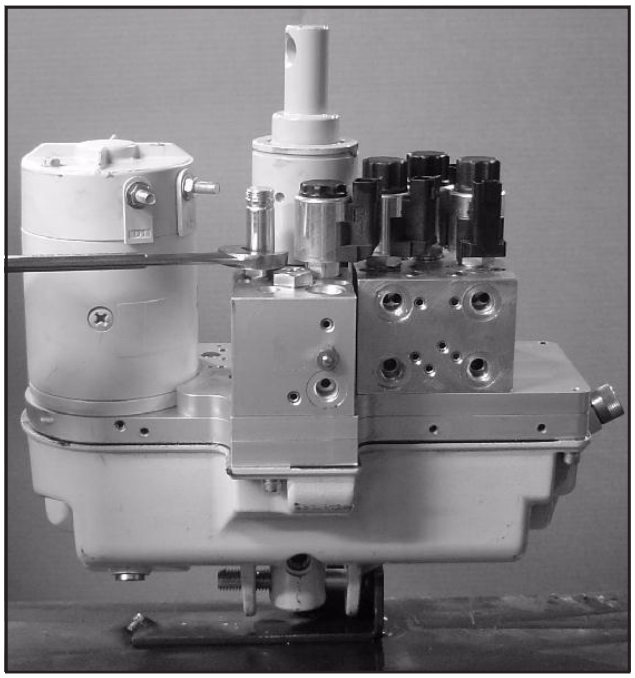


FIGURE 3-13
The “S3” Cartridge is removed using a 7/8" wrench or deep well socket.

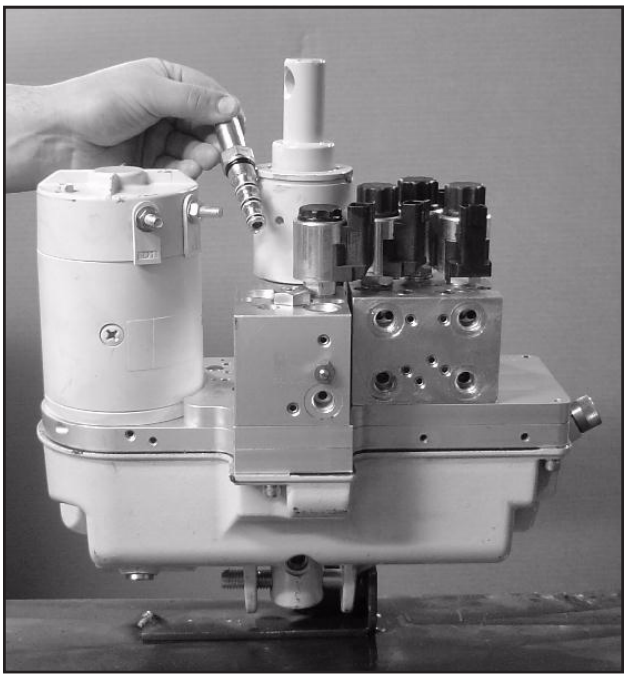


FIGURE 3-14
The “S3” Cartridge is removed. Clean by soaking cartridge in cleaning solvent.

DISASSEMBLY - V-68

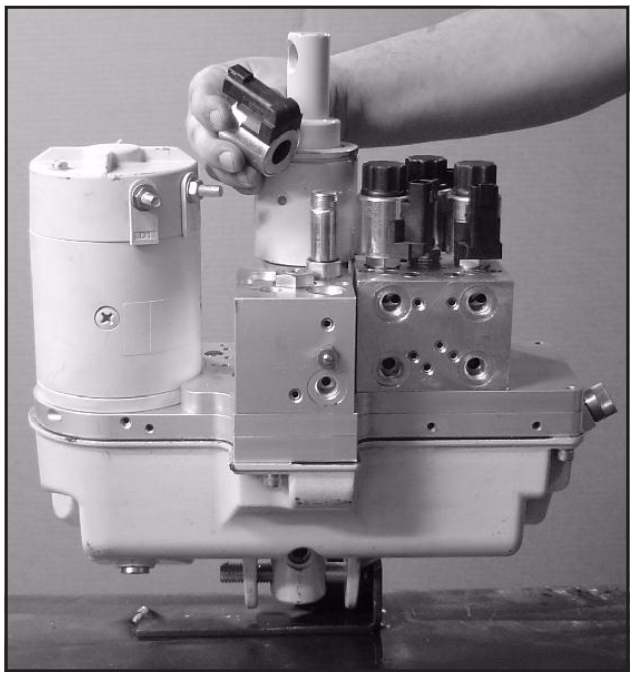


FIGURE 3-15
Coil removed from the “S2” Cartridge.

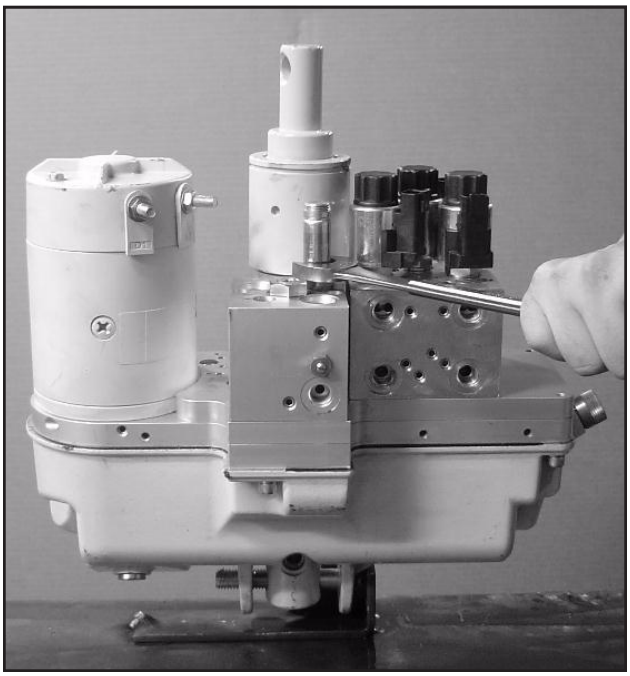


FIGURE 3-16
The “S2” Cartridge is removed using a 7/8" wrench or deep well socket.

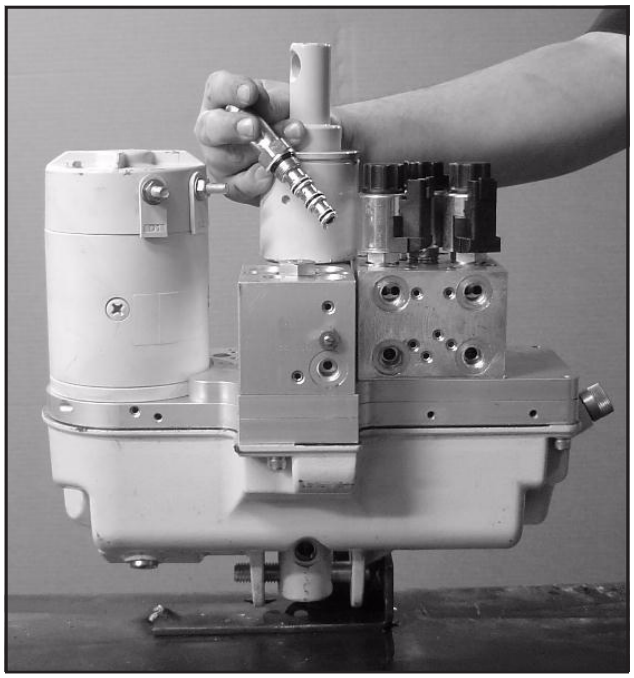


FIGURE 3-17
The “S2” Cartridge is removed. Clean by soaking cartridge in cleaning solvent.

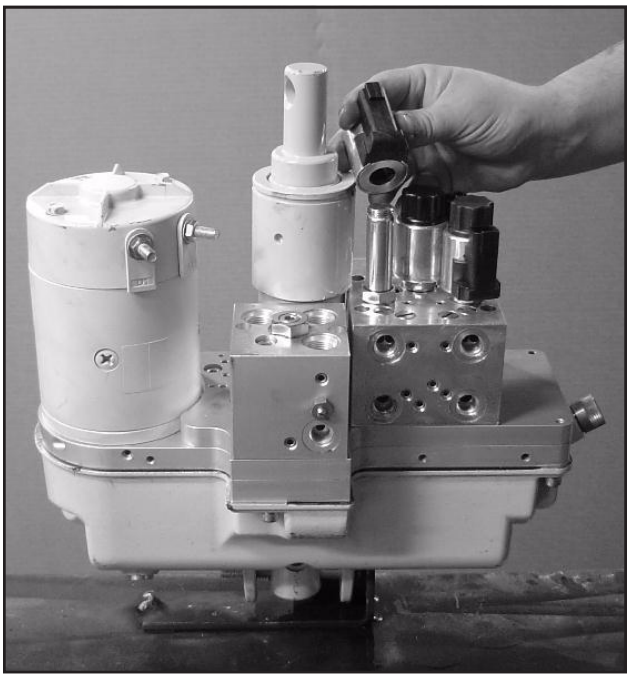


FIGURE 3-18
Coil removed from the “S6” Cartridge.

DISASSEMBLY - V-68

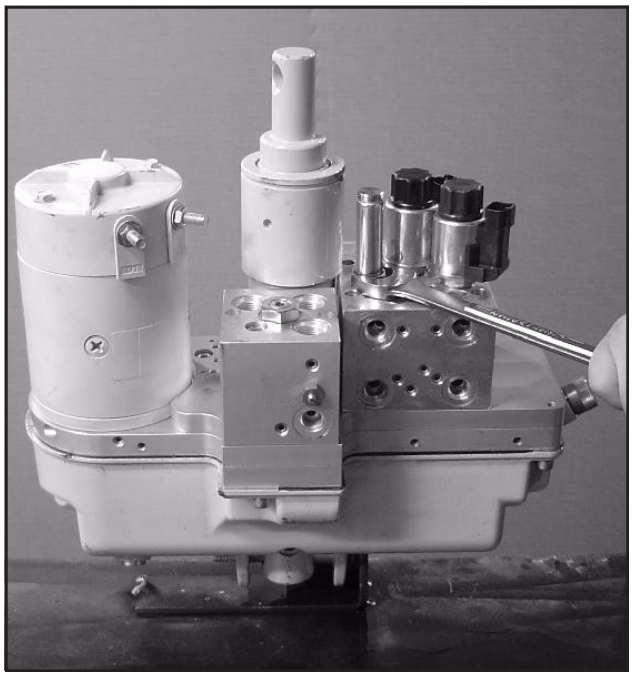


FIGURE 3-19

The “S6” Cartridge is removed using a 7/8" wrench or deep well socket.

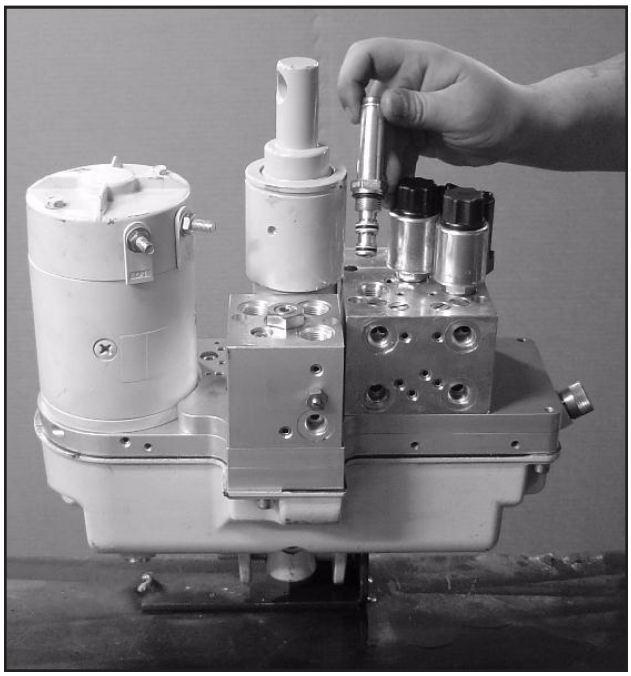


FIGURE 3-20

The “S6” Cartridge is removed. Clean by soaking cartridge in cleaning solvent.

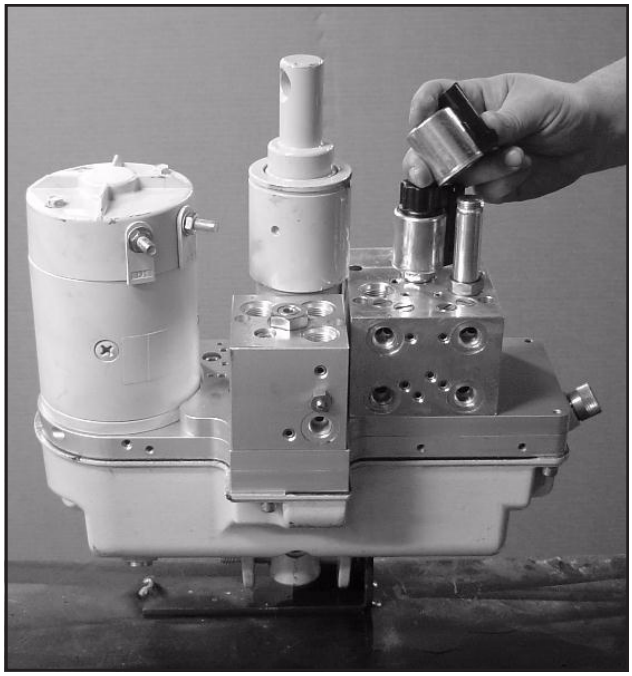


FIGURE 3-21

Coil removed from the “S5” Cartridge.

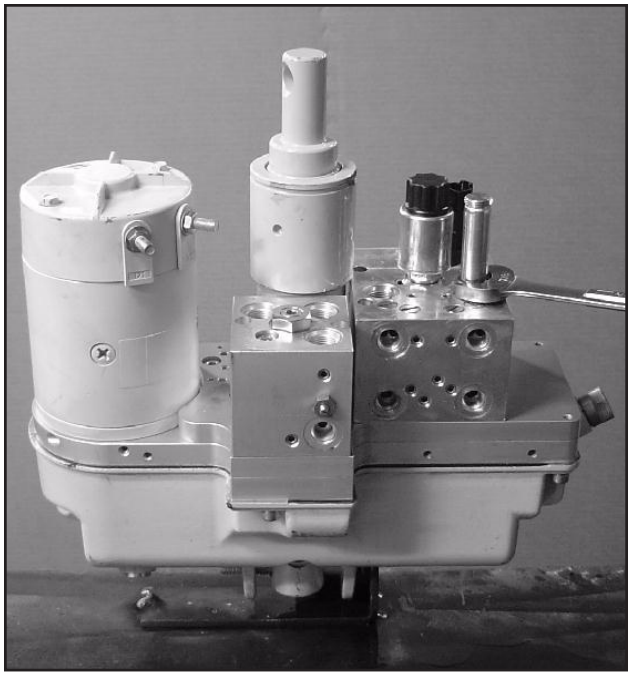


FIGURE 3-22

The “S5” Cartridge is removed using a 7/8" wrench or deep well socket.

DISASSEMBLY - V-68

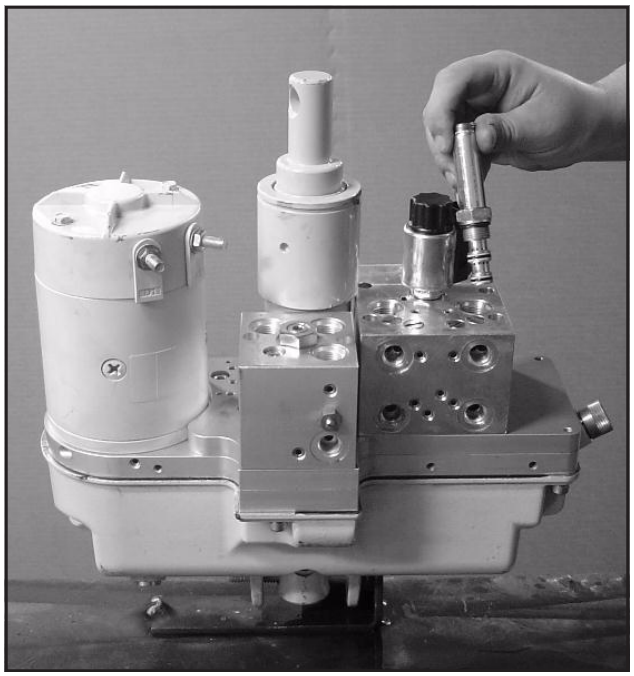


FIGURE 3-23
The “S5” Cartridge is removed. Clean by soaking cartridge in cleaning solvent.

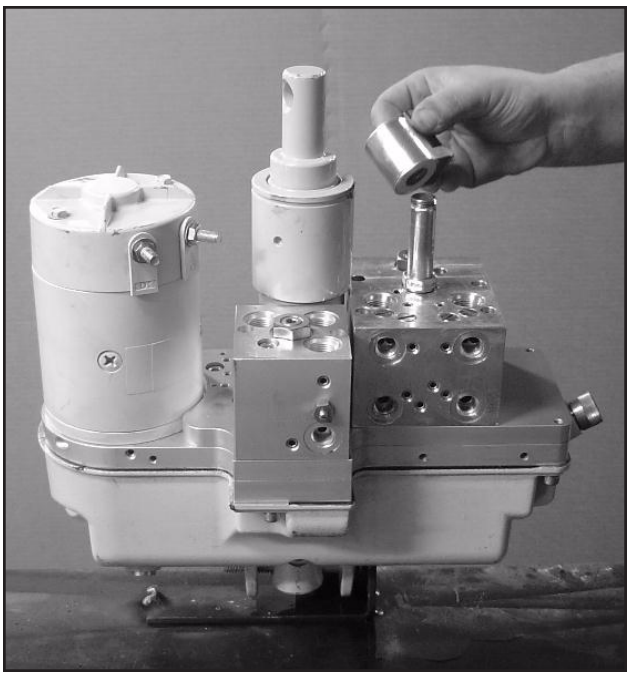


FIGURE 3-24
Coil removed from the “S7” Cartridge.

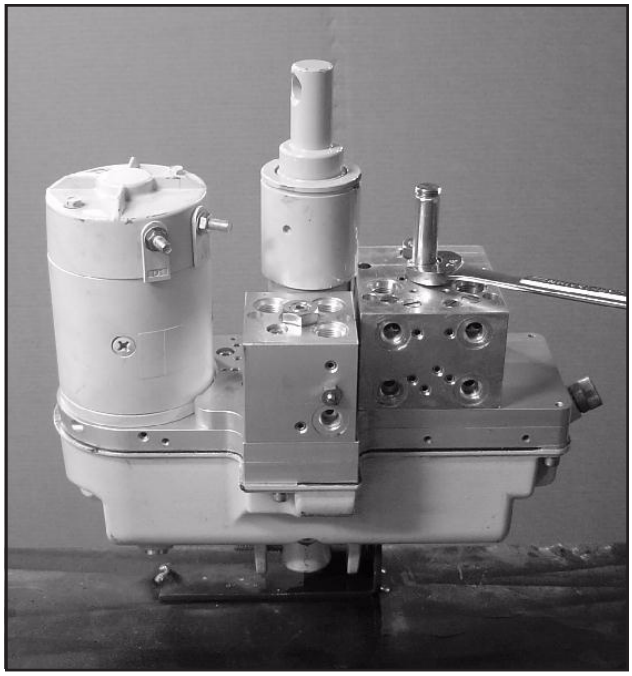


FIGURE 3-25
The “S7” Cartridge is removed using a 7/8" wrench or deep well socket.

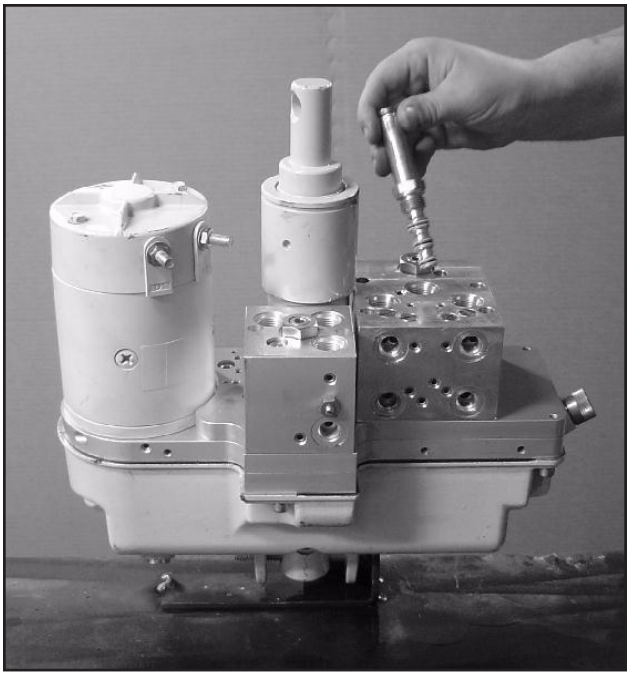


FIGURE 3-26
The “S7” Cartridge is removed. Clean by soaking cartridge in cleaning solvent.

DISASSEMBLY - V-68

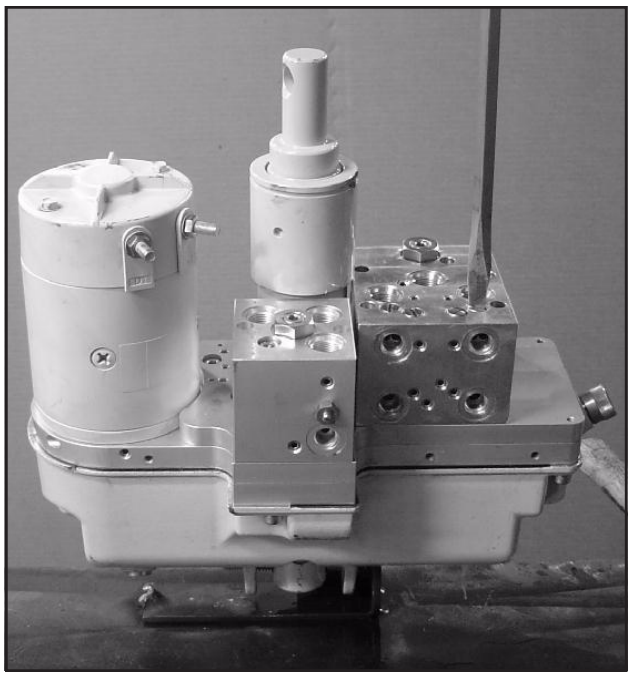


FIGURE 3-27
Using a lrage flat blade screwdriver loosen and remove Relief Valve Body.

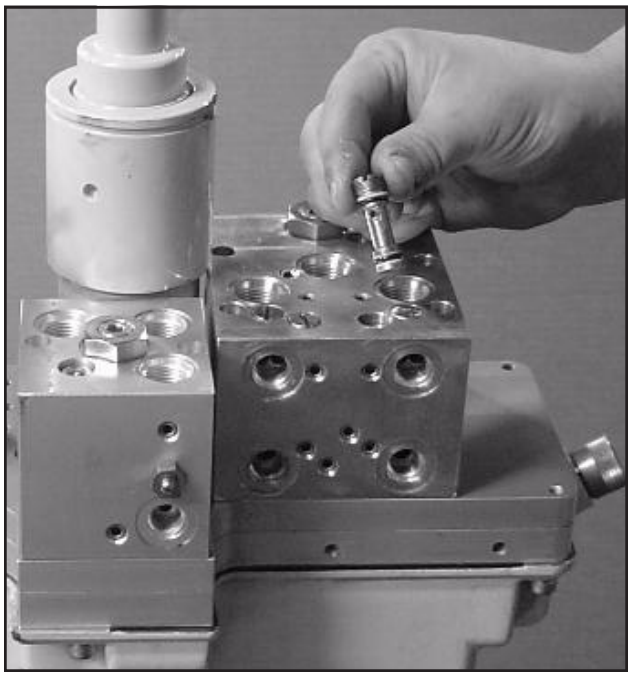


FIGURE 3-28
Remove Relief Valve Body..

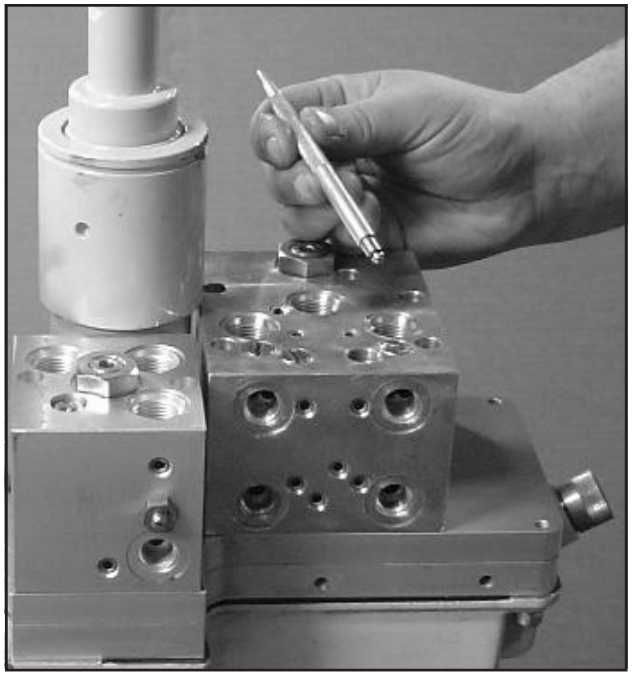


FIGURE 3-29
Use a magnet to retrieve the Relief Valve Ball.

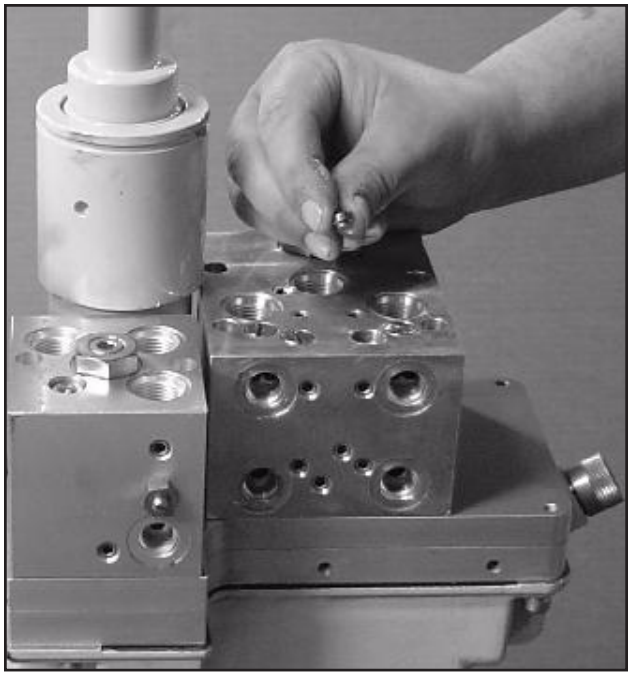


FIGURE 3-30
Use a magnet to retrieve the Relief Valve Ball Seat.

DISASSEMBLY - V-68

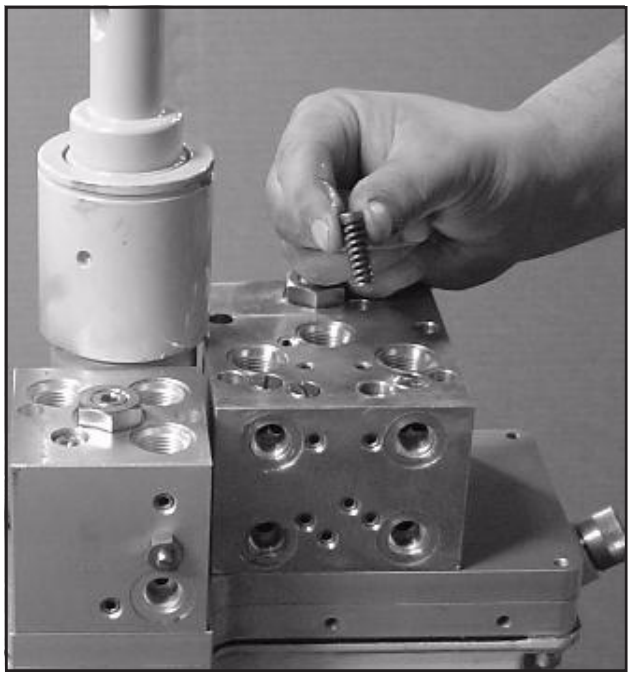


FIGURE 3-31

Use a magnet to retrieve the Relief Valve Spring. Repeat these steps (fig. 3-27 thru 3-31) on the three remaining Relief Valve Assemblies.

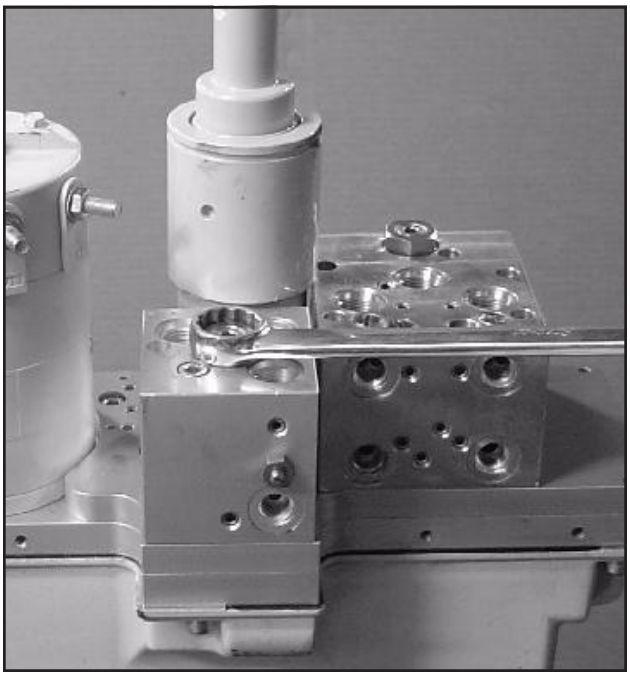


FIGURE 3-32

Use a 15/16” wrench or deep well socket to remove the P.O. Check valve assembly from the Universal Valve Block Assembly.

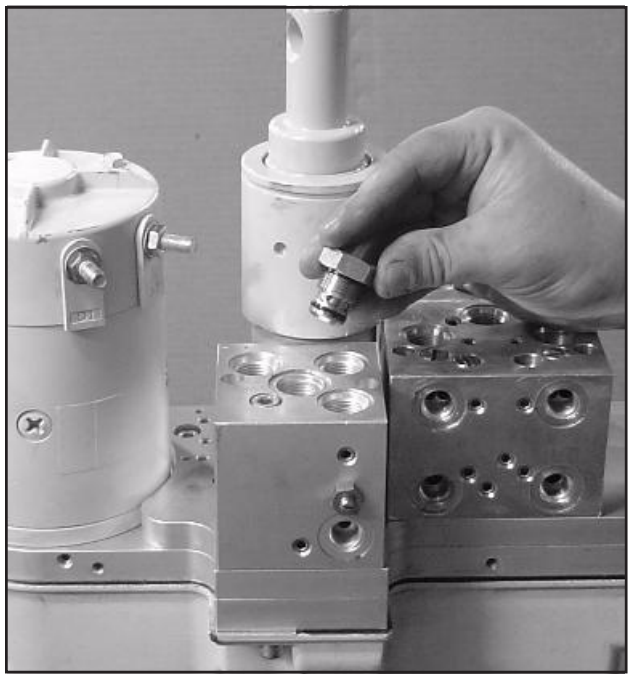


FIGURE 3-33

Remove the P.O. Check valve assembly. Clean by soaking Check valve in cleaning solvent.

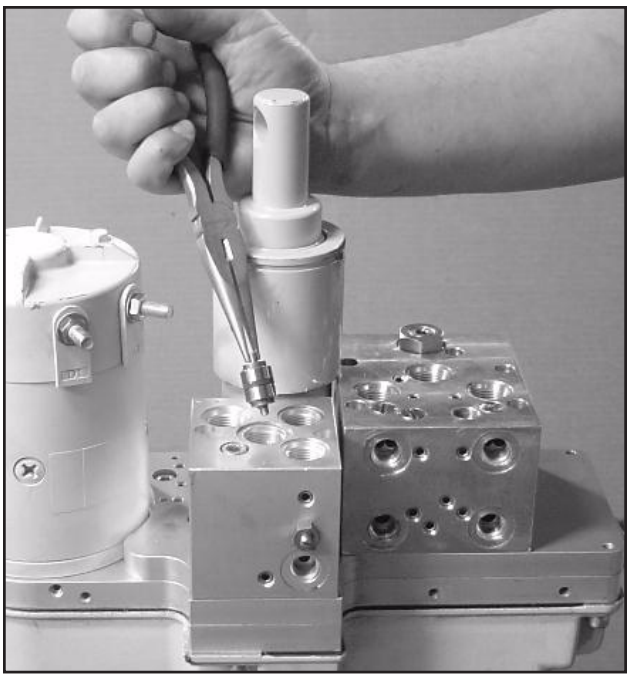


FIGURE 3-34

Use needle nose pliers to remove the P.O. Pilot Piston.

DISASSEMBLY - V-68

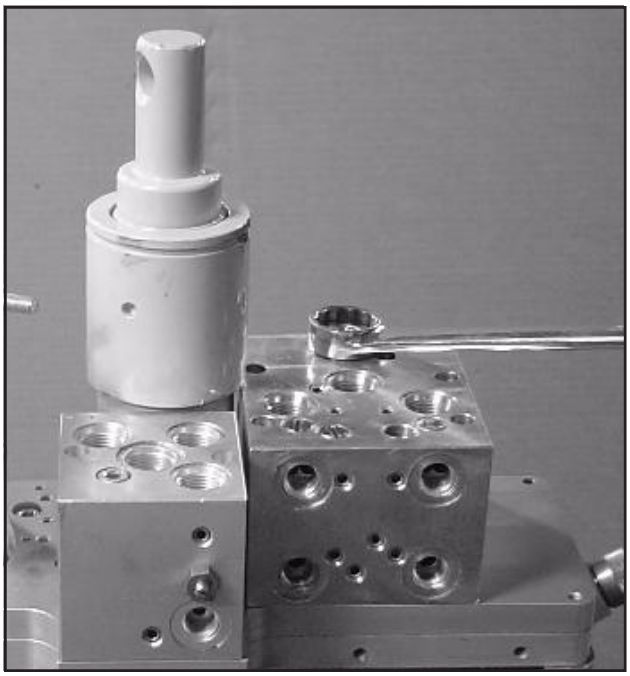


FIGURE 3-35

Use a 15/16” wrench or deep well socket to remove the P.O. Check valve assembly from the Super V Valve Block Assembly.

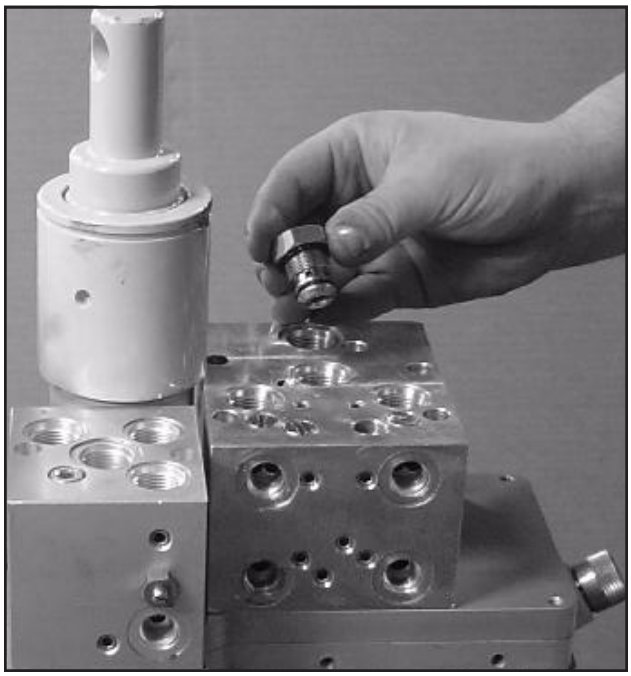


FIGURE 3-36

Remove the P.O. Check valve assembly. Clean by soaking Check valve in cleaning solvent.

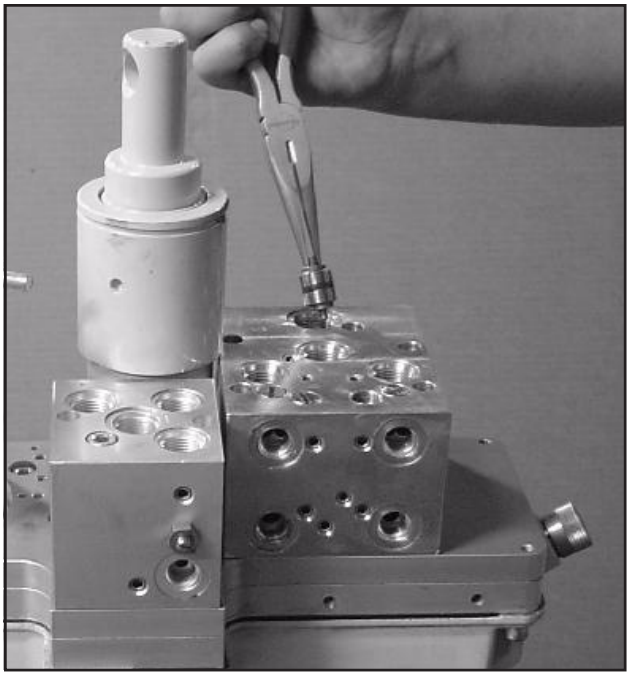


FIGURE 3-37

Use needle nose pliers to remove the P.O. Pilot Piston.

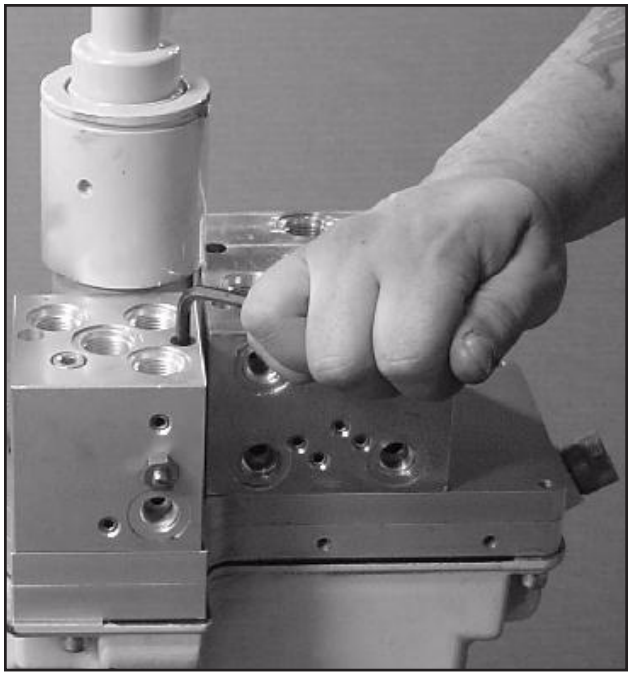


FIGURE 3-38

Use a 5mm allen wrench to remove the 2 bolts and a 6mm allen wrench to remove the remaining bolts which fasten the Universal Valve Block to the Base Plate.

DISASSEMBLY - V-68

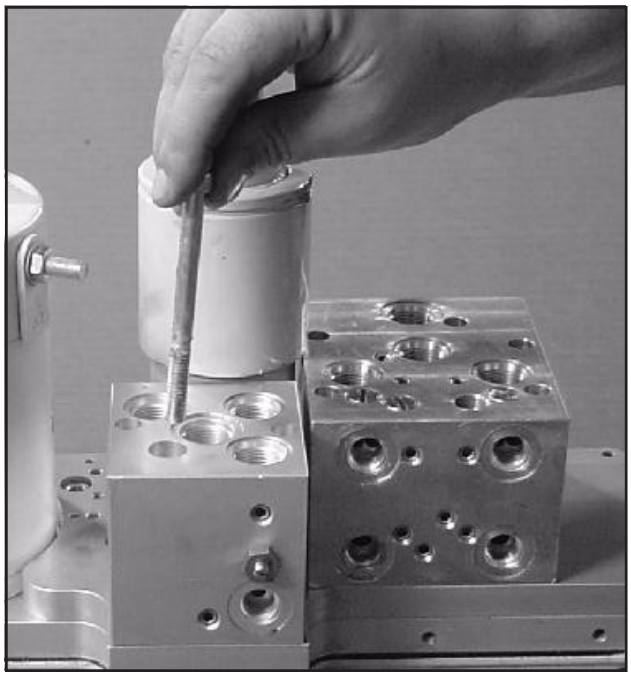


FIGURE 3-39
Remove the three bolts.

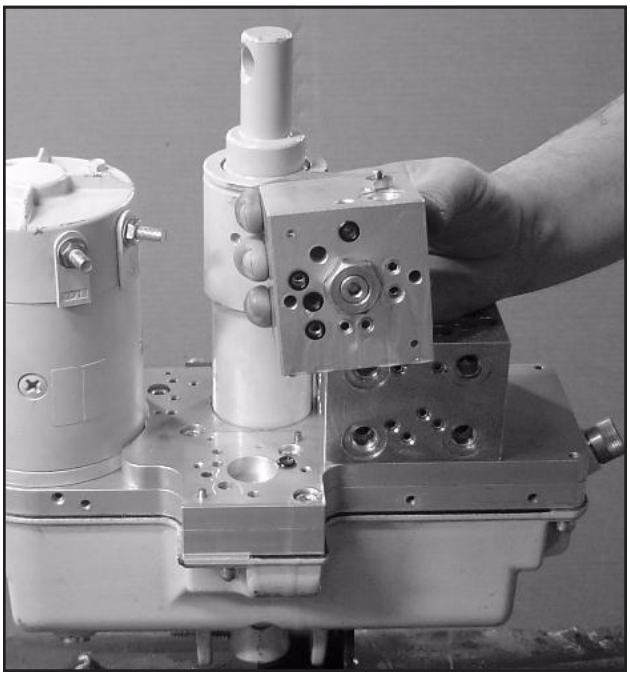


FIGURE 3-40
Remove the Universal Valve Block Assembly from the Base Plate. **Note: There a five o-rings between the block and the plate.**

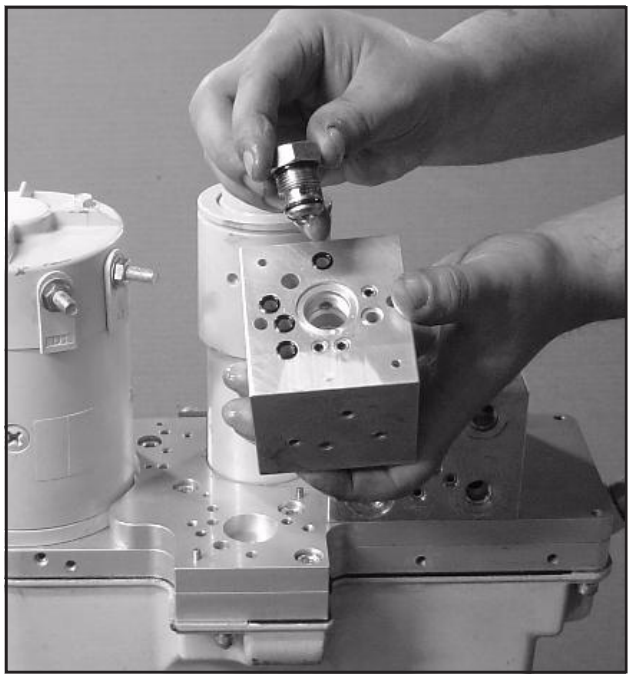


FIGURE 3-41
Use a 15/16" wrench or deep well socket to remove the bottom P.O. Check valve assembly from the Universal Valve Block Assembly.

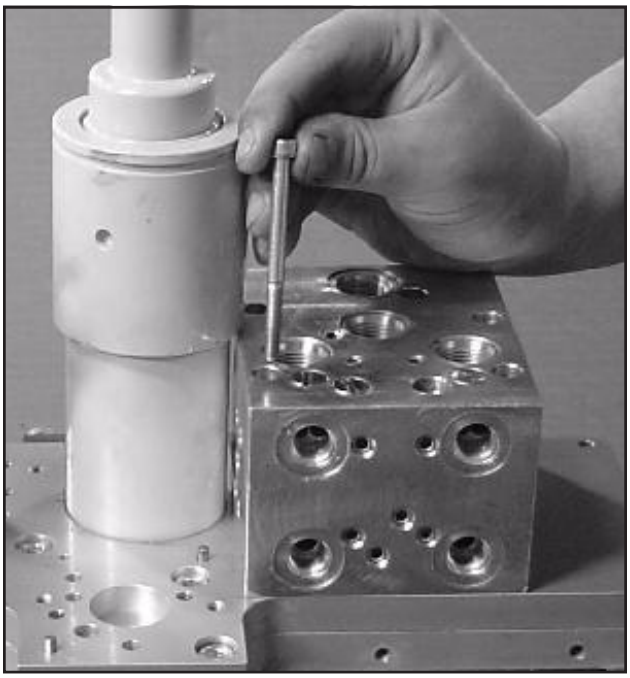


FIGURE 3-42
Use a 5mm allen wrench to remove the 5 bolts which fasten the Super V Valve Block to the Base Plate.

DISASSEMBLY - V-68

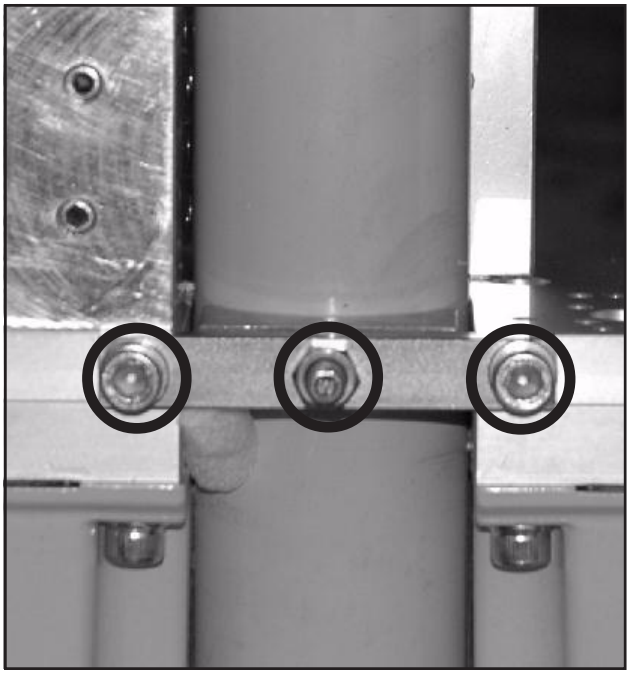


FIGURE 3-43

In order to remove the Super V Valve Block Assembly the Lift Ram must be removed. Use a 13mm wrench to loosen the nut in the center of the clamp assembly and then using a 5mm allen wrench remove the clamp assembly mounting bolts.

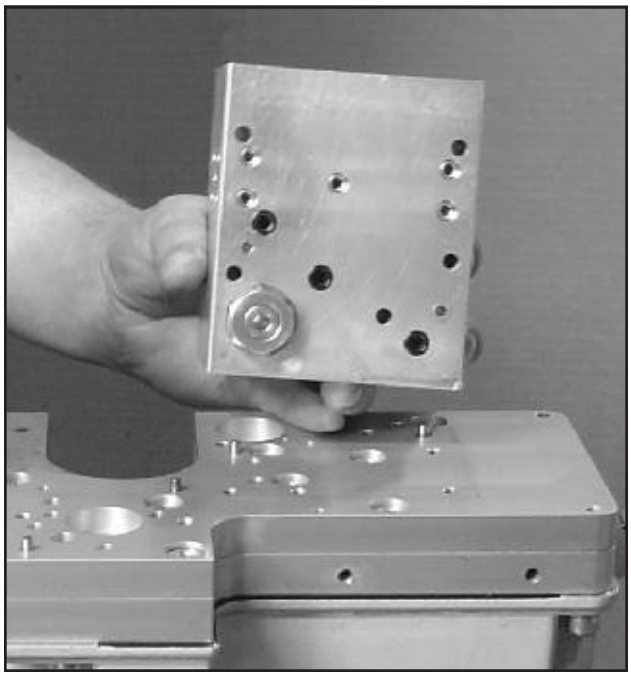


FIGURE 3-44

Remove the Super V Valve Block Assembly from the Base Plate. **Note: There are three o-rings between the block and the plate.**

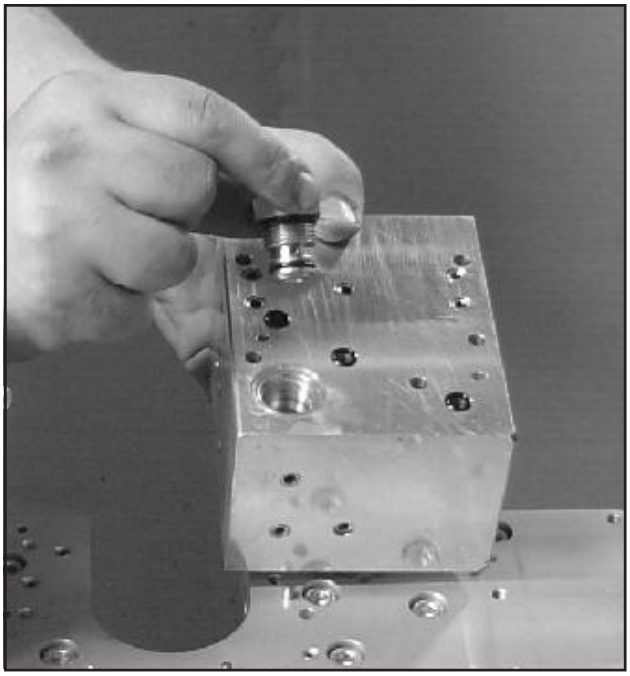


FIGURE 3-45

Use a 15/16" wrench or deep well socket to remove the bottom P.O. Check valve assembly from the Super V Valve Block Assembly.

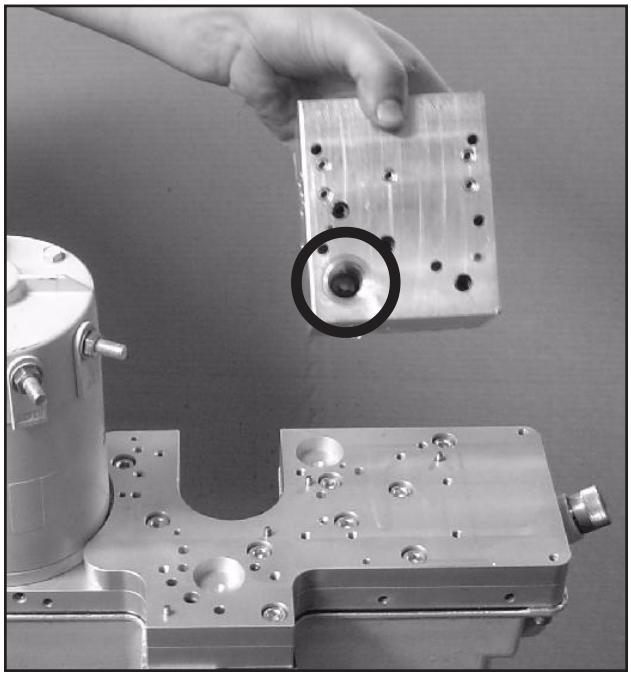


FIGURE 3-46

Use needle nose pliers to remove the P.O. Pilot Piston as shown in figure 3-37.

DISASSEMBLY - V-68

FIGURE 3-47

Using a 10mm wrench loosen the two motor mounting bolts.

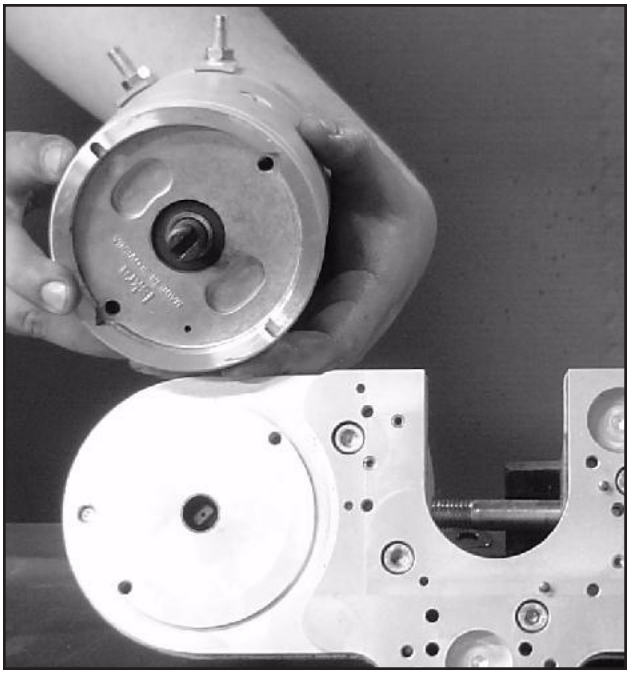


FIGURE 3-48

Carefully remove the motor as one piece. While holding motor together use the motor mounting bolts along with a 1/4 -20 nut to prevent the motor from pulling apart.

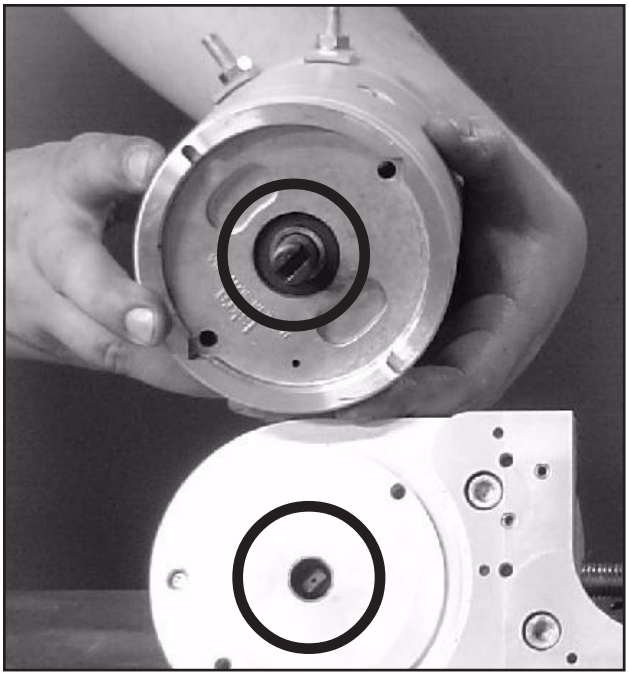


FIGURE 3-49

Crefully remove Pump Shaft Extension from the motor or the pump. It may be at either point. In the above picture it is still on the motor.

FIGURE 3-50

Using a 6mm allen wrench loosen and remove the 6 bolts which attach the Base Tank to the Base Plate.

DISASSEMBLY - V-68

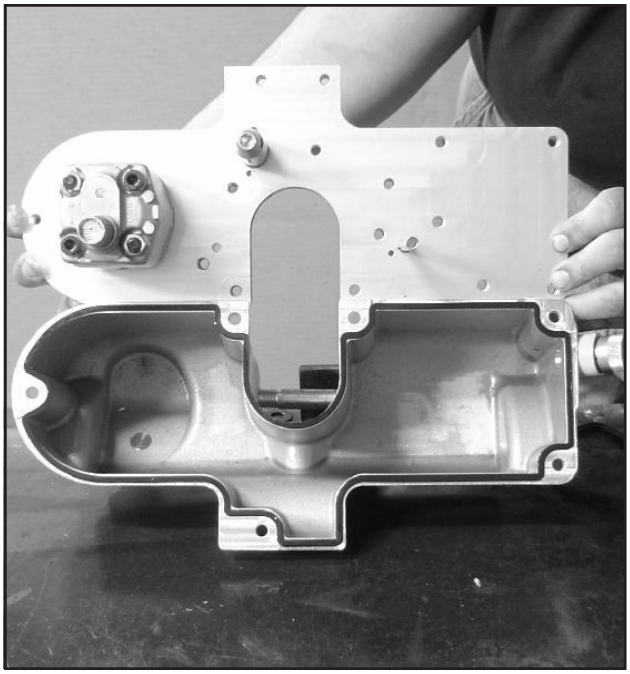


FIGURE 3-51
Seperate the Base Tank from the Base Plate.

FIGURE 3-52
Use a 6mm allen wrench to remove the two bolts holding the Pump Assembly to the bottom of the Base Plate.

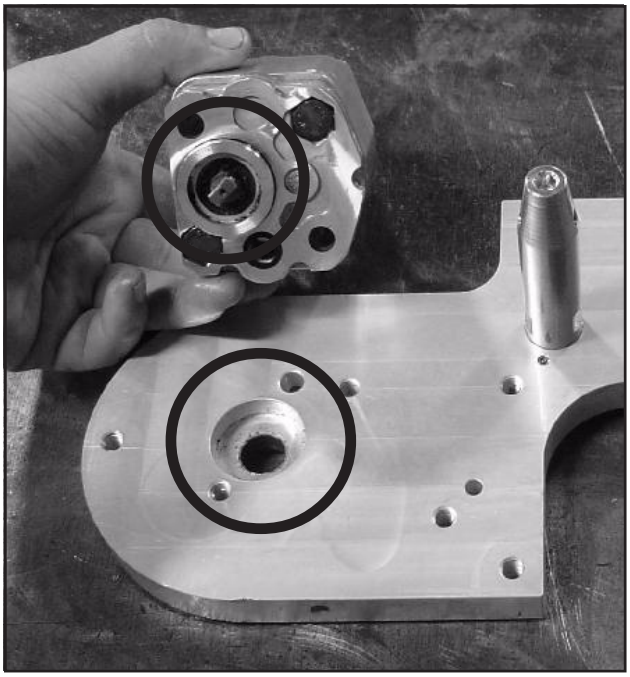


FIGURE 3-53
Carefully remove Pump Assembly from Base plate. Do not damge the boss where the o-ring seats.

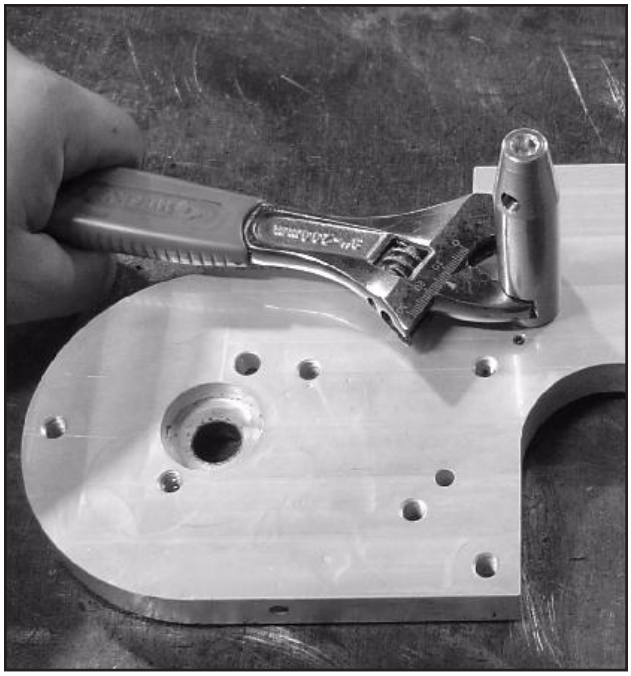


FIGURE 3-54
Use an adjustable wrench to loosen the Pump Relief Valve from the Base Plate.

DISASSEMBLY - V-68

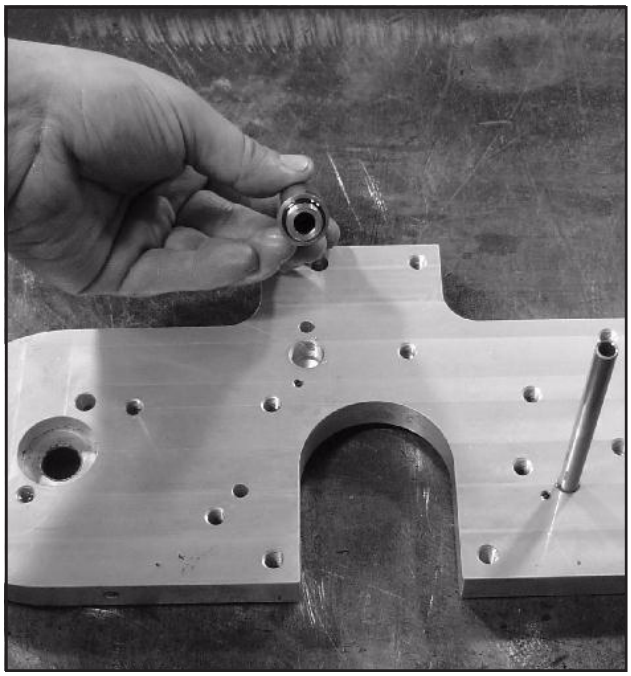


FIGURE 3-55
Remove the Pump Relief Valve from the Base Plate.

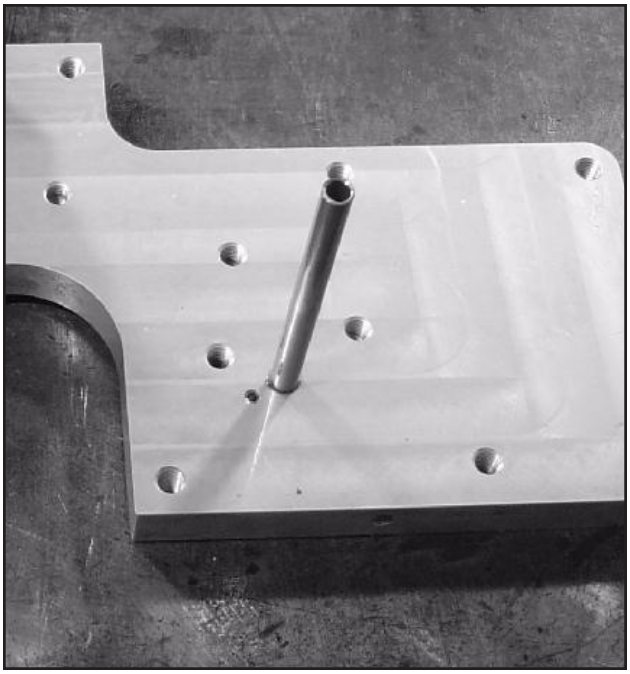


FIGURE 3-56
All that is left in the Base Plate is the oil return tube. Be sure it is tight and not damaged (bent/pinched) or clogged for proper operation.

REASSEMBLY - V-68

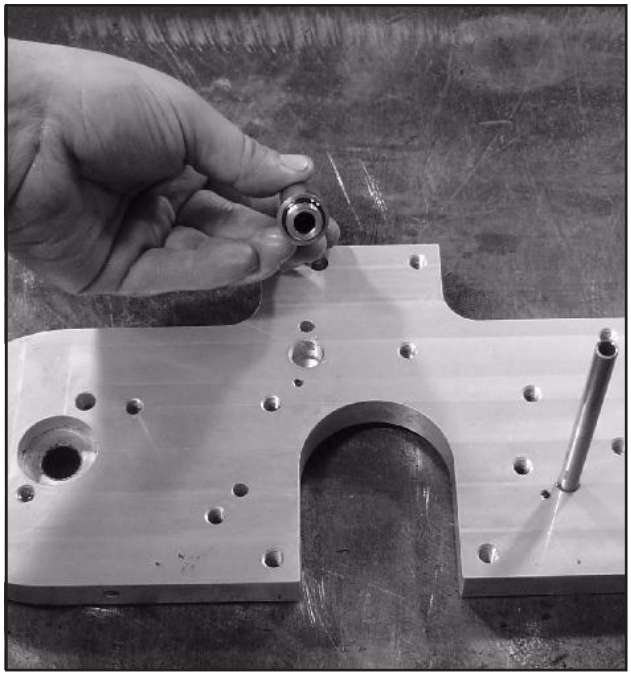


FIGURE 3-57
Replace o-ring on Pump Relief Valve and screw into Base Plate. Torque Pump Relief Valve to 310 in. lbs.

FIGURE 3-58
Remove Pump Filter Assembly and clean. Install new o-ring and re-assemble. Torque Pump Filter Assembly to 195 in. lbs.

REASSEMBLY - V-68

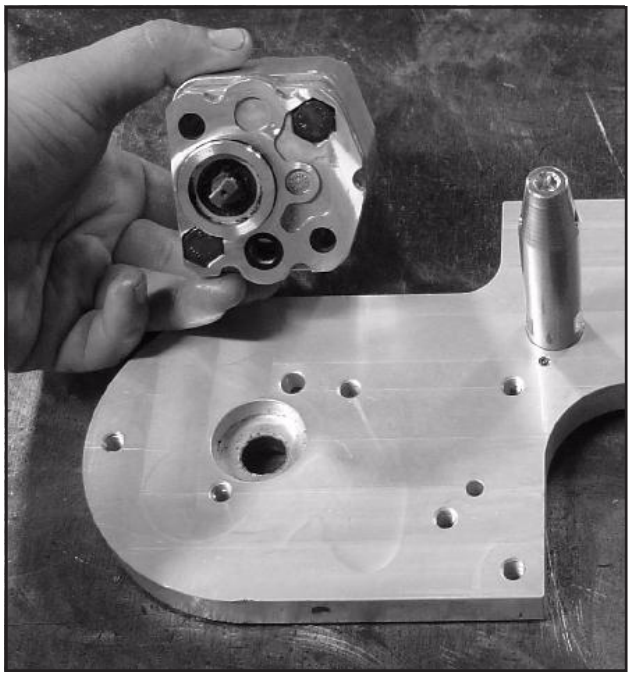


FIGURE 3-59

Replace o-rings and install Pump Assembly to Base Plate. Use a 6mm allen wrench to torque the two M8-1.25p x 80mm allen head bolts to 105 in. lbs.

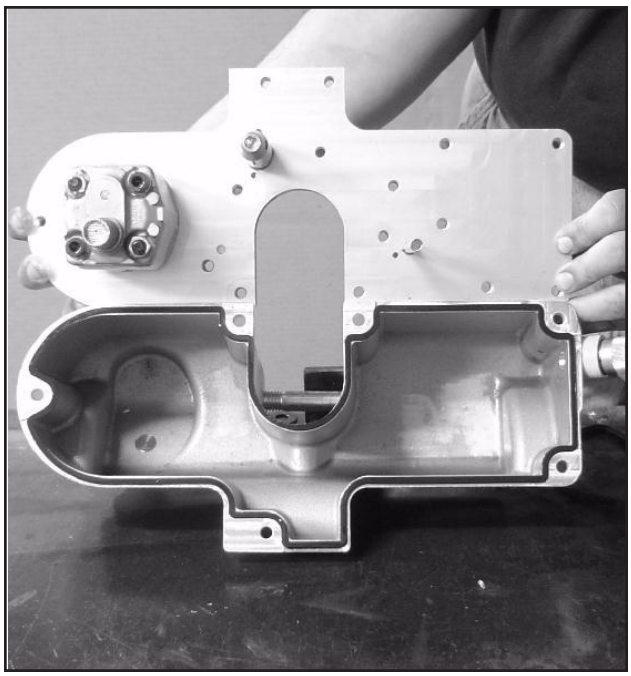


FIGURE 3-60

Clean Base Tank thoroughly. Install new Base Tank Gasket and carefully assemble Base Plate to Base Tank. Be careful not to pinch the Base Tank Gasket. Use a 6mm allen wrench to torque the six M8-1.25p x 25mm allen head bolts to 195 in. lbs.

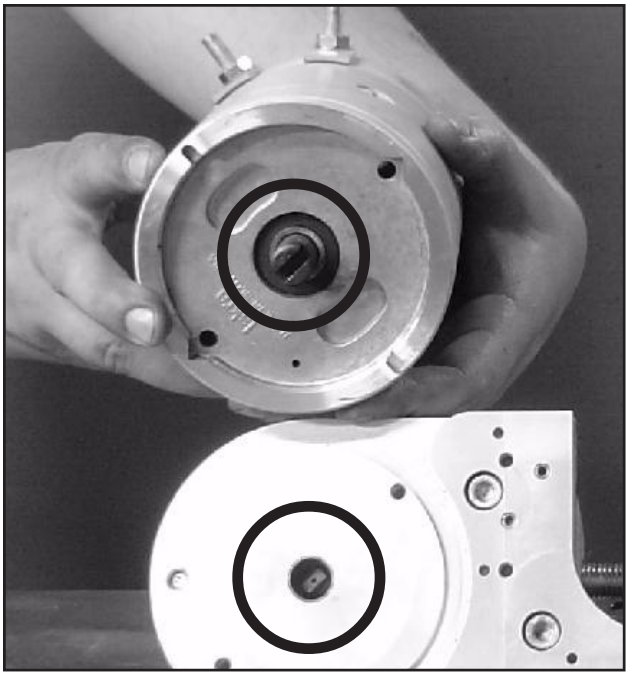


FIGURE 3-61

Carefully align Pump Shaft to Motor Shaft using the Pump Shaft Extension and assemble Motor to Base Plate.

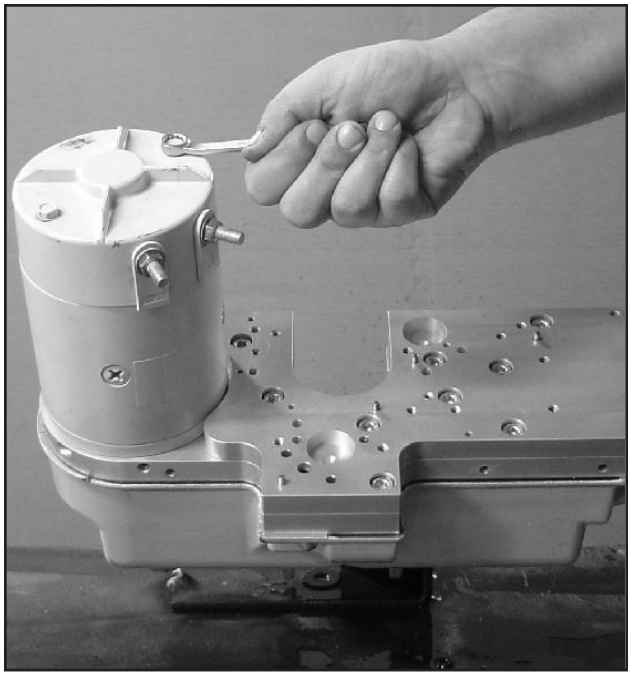


FIGURE 3-62

Make sure Motor is oriented to Base Plate as pictured above. Using a 10mm wrench torque Motor Studs to 60-72 in. lbs.

REASSEMBLY - V-68

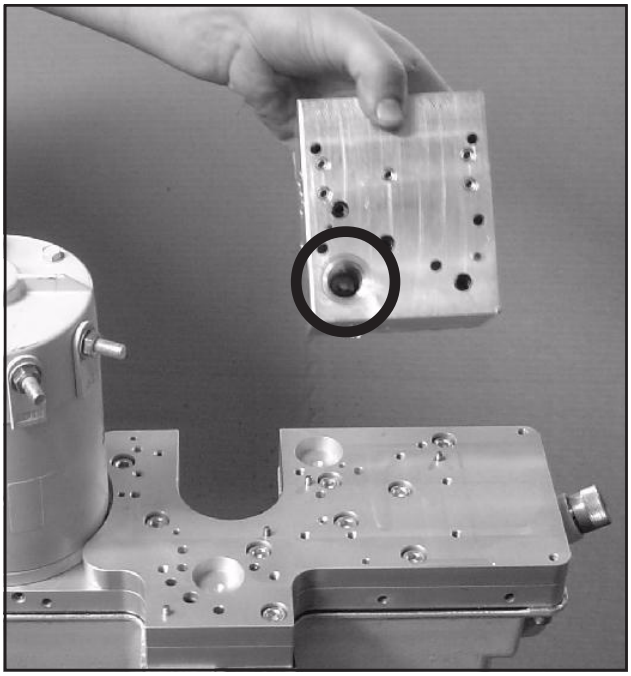


FIGURE 3-63

Install P.O. Pilot Spool Assembly with new inner and outer o-rings to the Super V Valve Block Assembly.

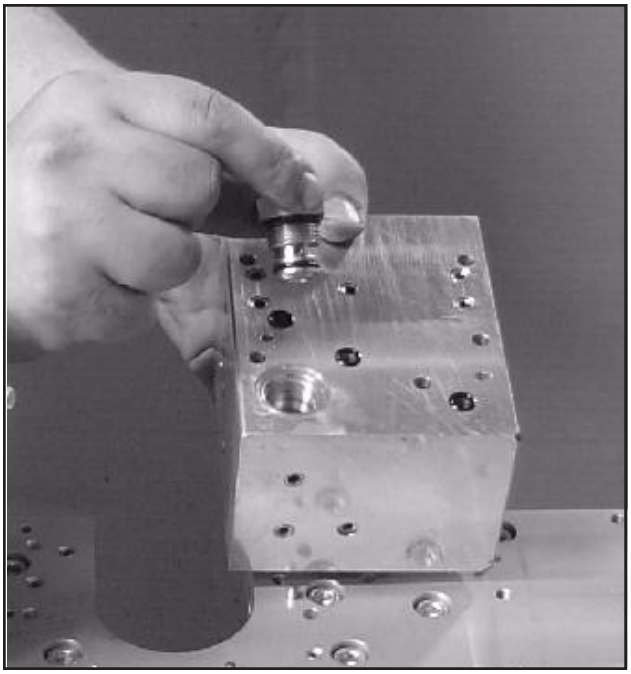


FIGURE 3-64

Replace the two o-rings and install Check Valve Assembly into the Super V Valve Block Assembly. Use a 15/16" socket to tighten the Check Valve Assembly.

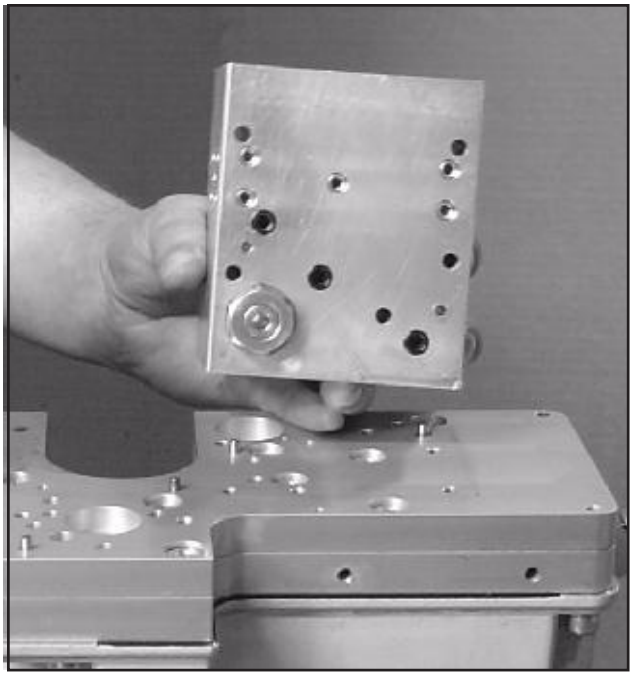


FIGURE 3-65

Replace the three o-rings and install the Super V Valve Block Assembly to the Base Plate.

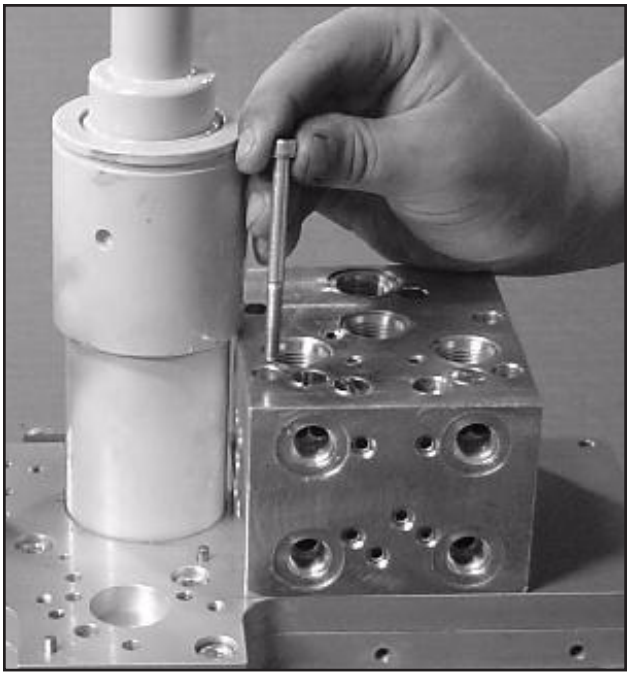


FIGURE 3-66

Use a 5mm allen wrench to install the Super V Valve Block to the Base Plate. Torque the five M6-1p x 70mm bolts to 85-90 in. lbs.

REASSEMBLY - V-68

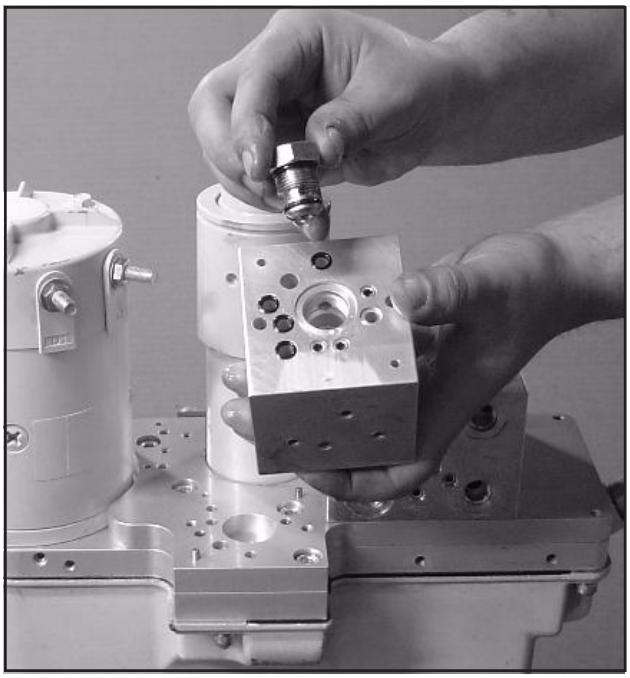


FIGURE 3-67

Replace the two o-rings and install Check Valve Assembly into the Universal Valve Block Assembly. Use a 15/16” socket to tighten the Check Valve Assembly.

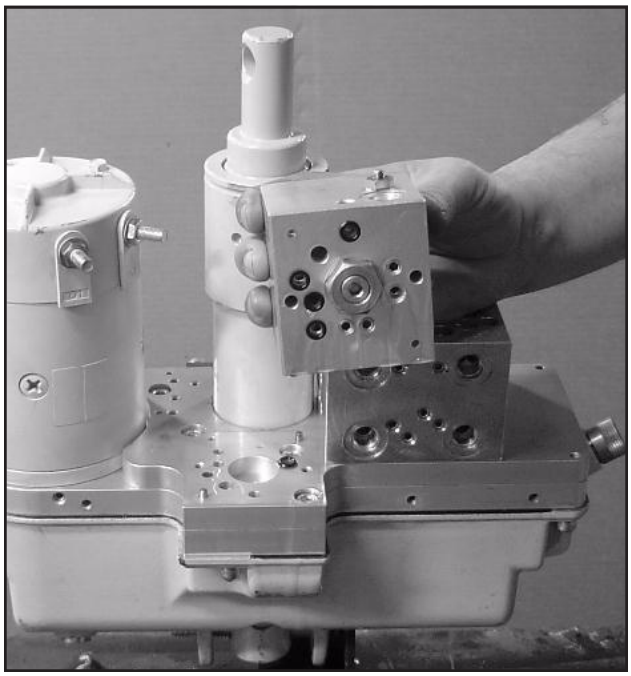


FIGURE 3-68

Replace the five o-rings and install the Universal Valve Block Assembly to the Base Plate.

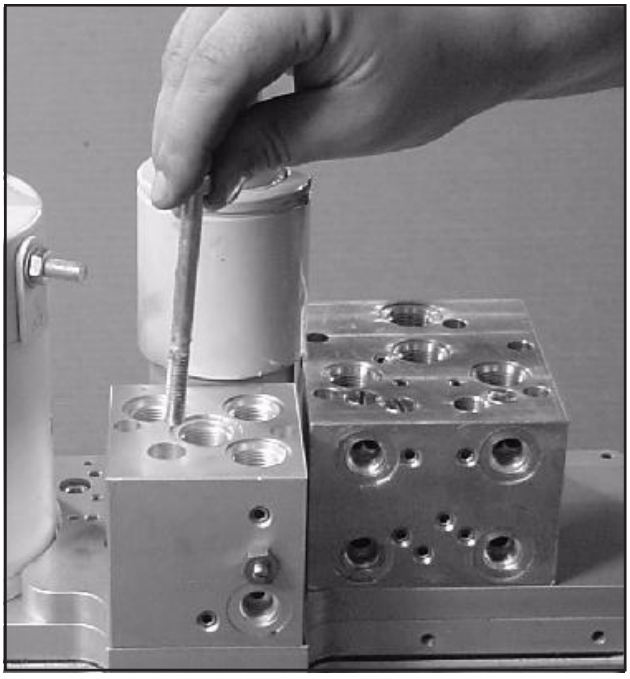


FIGURE 3-69

Use a 5mm and 6mm allen wrench to install the three Universal Valve Block to the Base Plate. Torque the two M6-1p x 70mm bolts to 85-90 in. lbs. and torque the one M8-1.25p x 90mm bolt to 140-145 in. lbs.

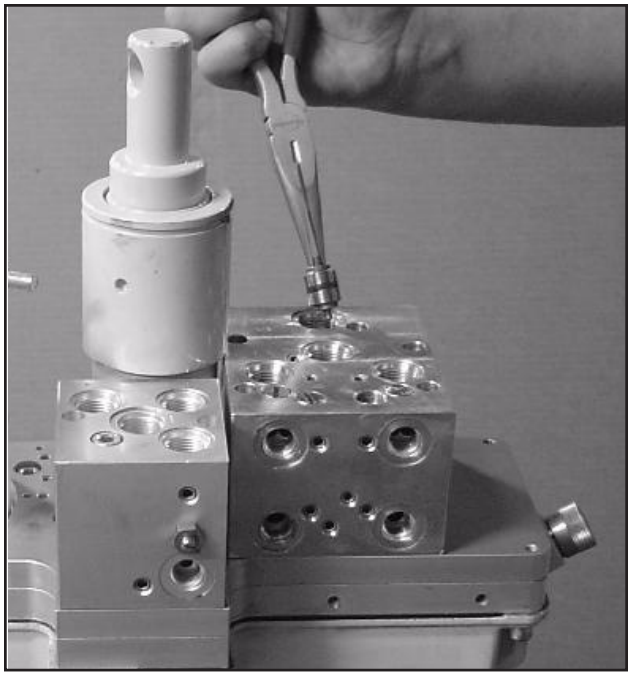


FIGURE 3-70

Install P.O. Pilot Spool Assembly with new inner and outer o-rings to the Super V Valve Block Assembly.

REASSEMBLY - V-68

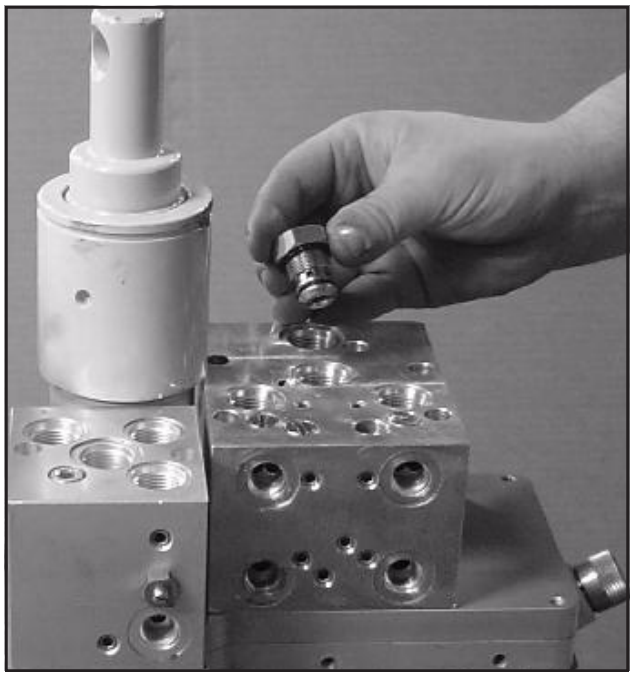


FIGURE 3-71

Replace the two o-rings and install Check Valve Assembly into the Super V Valve Block Assembly. Use a 15/16" socket to tighten the Check Valve Assembly.

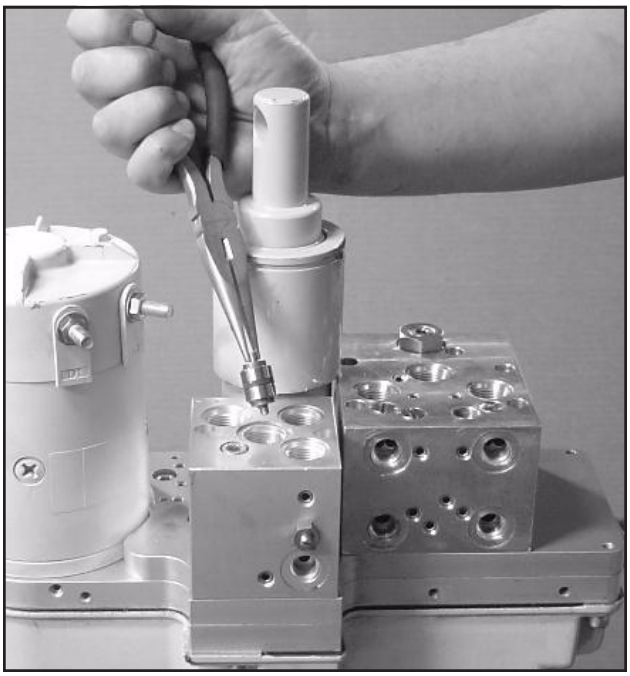


FIGURE 3-72

Install P.O. Pilot Spool Assembly with new inner and outer o-rings to the Universal Valve Block Assembly.

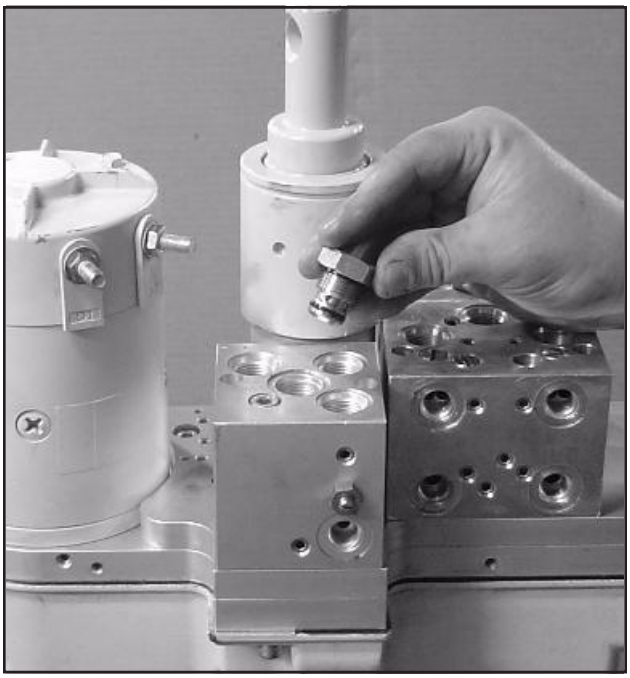


FIGURE 3-73

Replace the two o-rings and install Check Valve Assembly into the Universal Valve Block Assembly. Use a 15/16" socket to tighten the Check Valve Assembly.

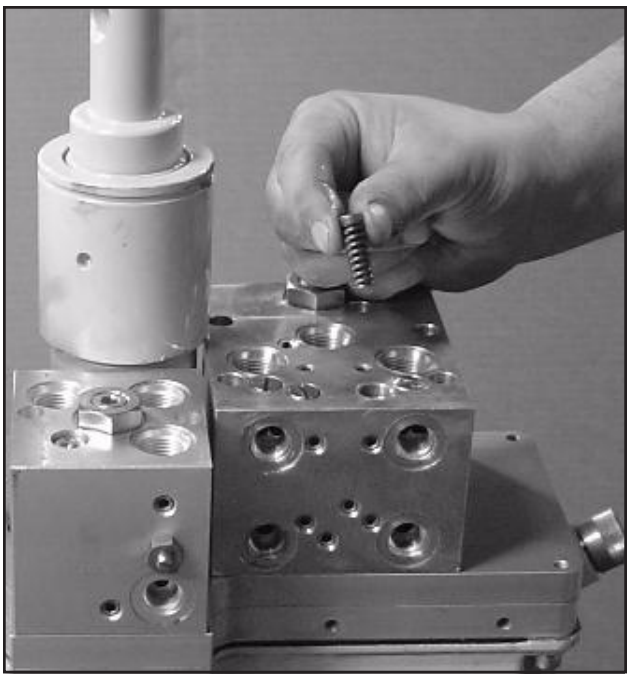


FIGURE 3-74

Assemble the Relief Valve Spring to the Ball Seat then drop into the cavity with the Ball Seat up.

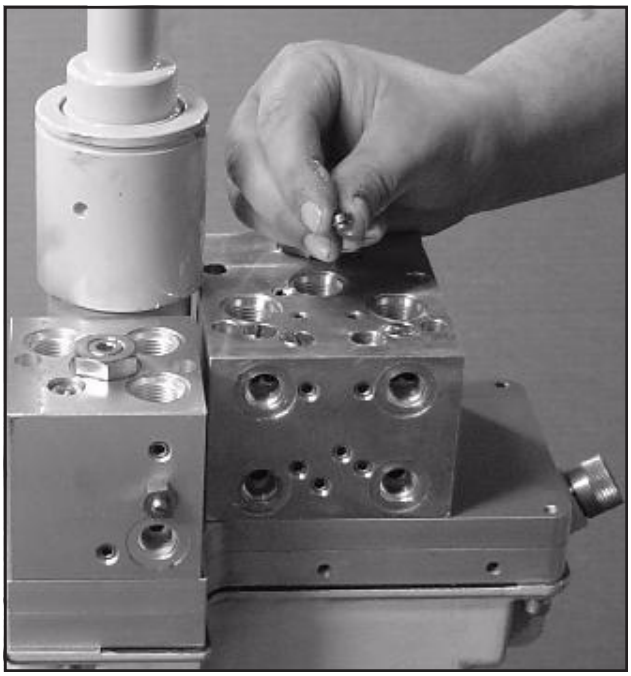


FIGURE 3-75
Drop the Relif Valve Ball onto the Ball Seat.

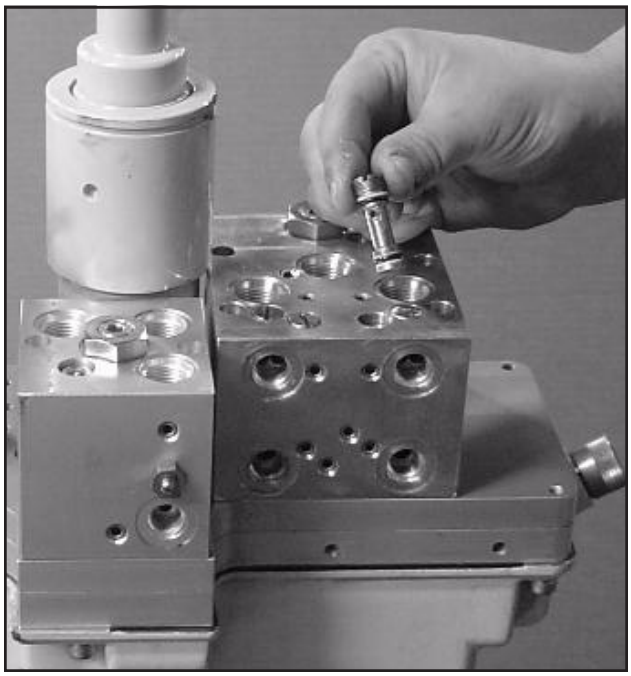


FIGURE 3-76
Install two new o-rings and two new back up rings onto the Relief Valve Body. Insatall Relief Valve Body and using a screwdriver tighten into the Super V Valve Block. Repeat these steps (fig. 3-74 thru 3-76) on the three remaining Relief Valve Assemblies.

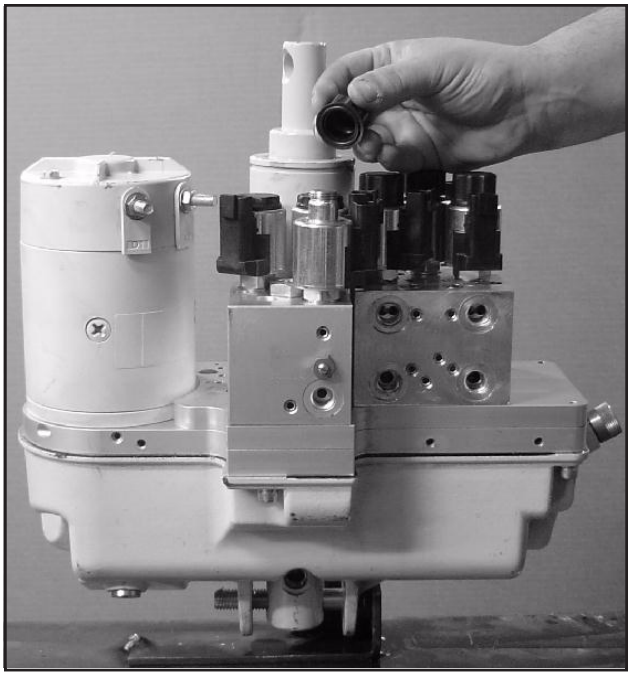


FIGURE 3-77
Install all Solenoid Assemblies using a 7/8" Deep Well Socket for the Solenoid Cartridges. See parts breakdown on page 38 & 39 for proper Solenoid Assembly locations. Note: each Solenoid Cartridge has the Meyer Part No. engraved.

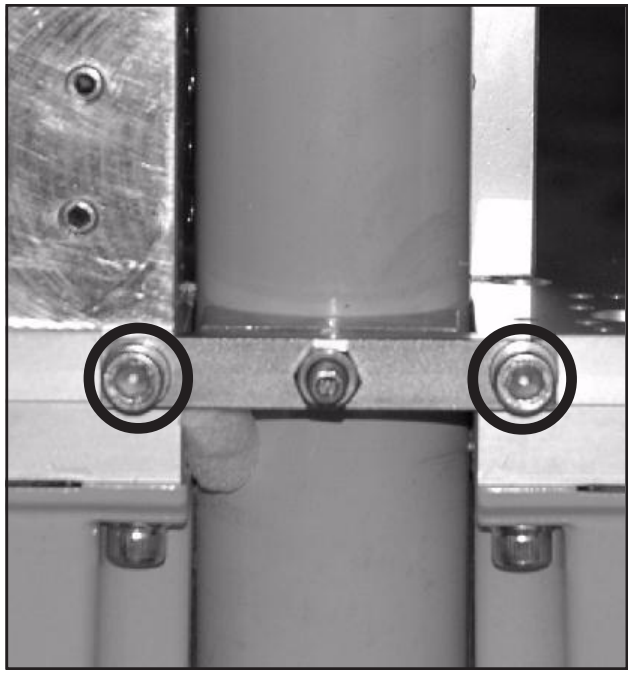


FIGURE 3-78
Assemble the Lift Ram to the Base Plate using the Ram Clamp Assembly. Attach the clamp assembly to the Base Plate using two M8-1.25p x 20mm bolts and tighten with a 6mm allen wrench.

REASSEMBLY - V-68

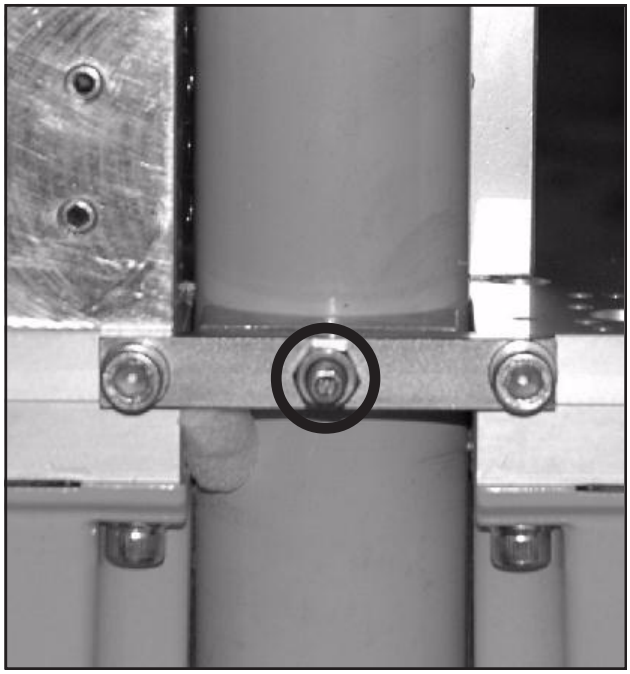


FIGURE 3-79

Using a 5mm allen wrench snug the clamp assembly. Then use a 13mm wrench to tighten the jam nut in the center of the clamp assembly.

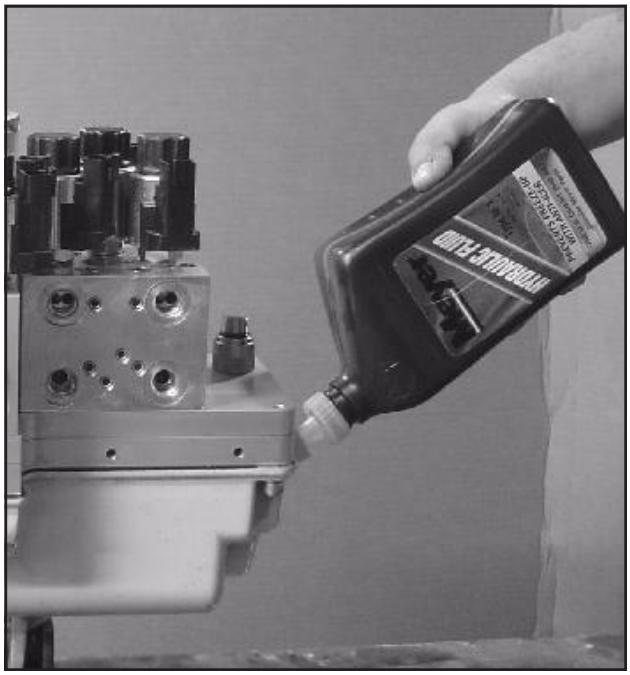


FIGURE 3-80

Fill Hydraulic Unit with Meyer M-1 Fluid. Proper fluid level is just below the neck of the filler hole. It must be checked with the Lift Ram fully retracted.

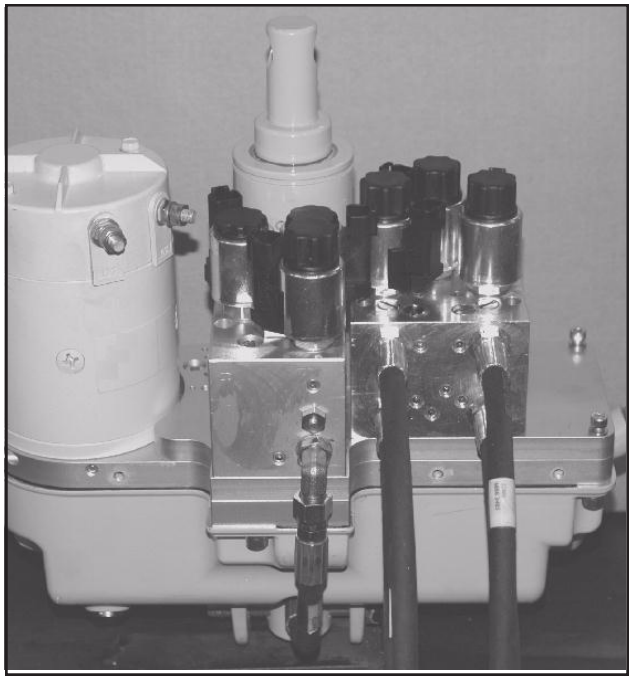


FIGURE 3-81

Attach the two 1/4” hoses (top ports) and two 3/8” hoses (bottom ports) and fittings from the Super V valve block assembly and install one 1/4” hose and fitting from the universal valve block assembly to the Lift Ram.

FIGURE 3-82

Reinstall front and rear covers using six M6-1p x 14mm screws.

BRUSH REPLACEMENT OF ISKRA MOTOR - All Models

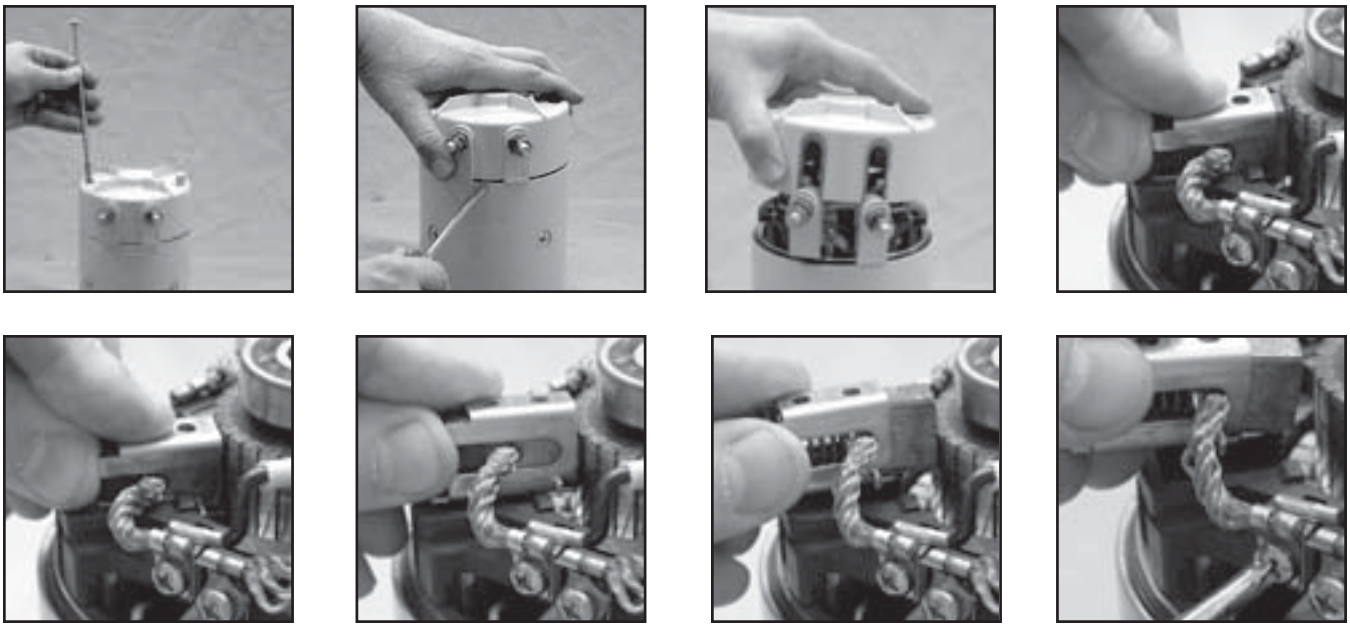


FIGURE 3-120

Remove motor from hydraulic unit. Remove top cap from motor housing. To replace brushes (part # 15854) start by pushing each brush assembly towards the commutator. Remove old assembly from the insulated mounting plate, removing retaining screws. Replace with a new brush assembly by reversing the above procedure. It is recommended that each brush be changed in turn to avoid confusion, make sure that each brush assembly is replaced with the correct part that has the brush cable on the the same side. Service Kits consist of 2 matching pairs of brush assemblies.

HYDRAULIC SPECIFICATIONS

ELECTRICAL SPECIFICATIONS

MOTOR

ISKRA AMJ4739 12V.

No load (motor not attached to pump)

NOTE: Do not operate motor continuously for more than 30 seconds.

Applied Voltage	12 Volts DC
Max. Current Draw	150 Amperes
Speed (Min.)	3,200 RPM

Under load (pump operating in relief)

NOTE: Do not operate motor continuously for more than 5 seconds.

Applied Voltage	12 Volts DC
Max. Current Draw	230 Amperes

SOLENOID VALVES "S1", "S2", "S3", "S5", "S6" & "S7"

Applied Voltage	12 Volts DC
Current Draw	1.5 Amperes

Nominal resistance (ohm meter lead connected to coil lead) 8.0 ohms ± 10%.

MOTOR SOLENOID

Applied Voltage	12 Volts DC
Max. Current Draw	5 Amperes

Nominal resistance (ohm meter lead connected to coil lead, other meter lead connected to metal foot) 2.65 to 4.5 ohms.

PUMP - Pressure Output

V-68 (Non Adjustable)	2000 P.S.I.

CROSSOVER RELIEF VALVE

Opening Pressure	2000 P.S.I.

HYDRAULIC FLUID CAPACITY

NOTE :1 Quart = 32 Fluid Ounces

Model V-68

Unit	2 qt., 0 oz.	(64 oz.)
Hoses, Lift Cylinder & D.A.	19 oz.	
Total	2 qt., 19 oz.	(83 oz.)

Meyer ELECTRO-LIFT

V-68 power unit service manual

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